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Developing environmental law scholarship: going beyond the legal space

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Elizabeth Fisher, Bettina Lange, Eloise Scotford and Cinnamon Carlarne have delivered a hard but justified message: environmental law scholarship is still perceived by many in the field as immature, and this is a reflection of the methodological challenges posed by its subject. This paper expands on their argument that scholars should think more closely about what can be learnt from debates about method in the wider legal mainstream and interdisciplinarity as part of the process of developing the discipline. It locates what is called 'classic' and 'novel' environmental law scholarship at the margins of the legal academy, which is conceptualised as an imagined legal 'space'. The paper then explores the ways in which insights derived from the environmental humanities and sciences can invigorate and mature environmental law scholarship by creating exciting new interdisciplinary contexts for the development of legal research methods.

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INTRODUCTION

In their 2009 paper 'Maturity and methodology: starting a debate about environmental law scholarship', Elizabeth Fisher, Bettina Lange, Eloise Scotford and Cinnamon Carlarne[1] shine an uncompromising light on a vital issue for environmental law scholars in the UK. They argue that concern about the immaturity of the discipline – something that many in the field recognise – is largely caused by the methodological challenges that environmental law presents to legal scholars, such as the speed and scale of change, interdisciplinarity, diverse perspectives on governance and multiple

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1. E Fisher et al 'Maturity and methodology: starting a debate about environmental law scholarship' (2009) 21(2) J Envtl L 213 (henceforth 'Fisher et al'). The debate has been continued in R Macrory 'Maturity and methodology: a personal reflection' (2009) 21(2) J Envtl L 251; O Pederson 'Modest pragmatic lessons for a diverse and incoherent environmental law' (2013) 33(1) Oxford J Legal Stud 103; J McEldowney and S McEldowney 'Science and environmental law: collaboration across the double helix' (2011) 13 Envtl L Rev 169; L Fisher 'Environmental law as 'hot' law' (2013) 25(3) J Envtl L 347; O Pederson 'The limits of interdisciplinarity and the practice of environmental law scholarship' (2014) 26(3) J Envtl L 423; and N Graham 'This is not a thing: land, sustainability and legal education' (2014) 26(3) J Envtl L 395.

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jurisdictions.[2] It follows from this that UK environmental law scholars should, among other things, engage in a constructive debate about legal methodology and interdisciplinarity, for it is by doing so that the difficulties inherent in the subject can be met head on and it can achieve its potential as an academic specialism.[3]

The objective of this paper is to contribute to the debate initiated by Fisher et al by developing a meta-level concept of UK legal scholarship, which is envisioned as a 'legal space': at the core of this space is research into the activities of judges, courts and legislators and the analysis of legal principle. It is then argued that, because of reasons inherent in its subject matter, environmental law research can be characterised as a spectrum ranging from 'classic' to 'novel' scholarship. The former is concerned with evaluating conventional legal issues such as tort or judicial review in an environmental context, while the latter seeks to analyse how governance and regulation interact with often highly polycentric environmental themes and phenomena, such as climate change. Classic environmental law scholarship is, given its subject matter, derivative of other specialisms at or near the core of legal space. It is a small field of study relative to major core subjects and, in comparative terms, it lacks academic critical mass. Novel environmental law scholarship is also, given its weak relationship with the world of judges, courts and legal principle, located at the margins of the legal space and can be characterised as being derivative of the wider field of governance studies.

Environmental law scholarship's relative lack of academic heft and intellectual distinctiveness, and its marginal status in the legal space – or in Fisher et al's terms, its immaturity – highlights the value of developing deeper connections with other environmental disciplines, and with science in particular. The utilisation of legal knowledge to enrich other environmental disciplines has the potential to give both classic and novel environmental law scholarship stronger, less derivative intellectual identities and can also deepen understanding of what makes legal scholarship valuable within the legal academy itself. The paper then explores how this process can be taken forward, focusing on how environmental law scholars can develop exciting new interdisciplinary perspectives on the use of legal research methods by drawing on recent initiatives linking the environmental humanities with science.

1. LEGAL SCHOLARSHIP AS 'LEGAL SPACE'

Environmental law scholarship, like all legal scholarship, exists in a broader context. How can this be imagined? It is surely reasonable to say that the majority of UK legal academics research and teach different aspects of the interrelated worlds of courts, tribunals, judges, lawyers, legislators and regulators. This is so irrespective of their subject specialisms and whether they define themselves as socio-legal, doctrinal,

2. Fisher et al briefly consider a range of reasons why environmental law scholarship might be perceived as immature: the intellectual incoherence of the subject; the perceived marginality of the scholarship, the poor quality of some of it; and the inherent difficulties of the subject. They then argue that perceptions of immaturity really reflect the methodological challenges of the subject. Fisher et al, above n 1, at 218–243.

3. Fisher et al also suggest that environmental law scholars should think more about the relationship between method and research questions, mapping the subject and having a more explicit debate about the quality of scholarship. Ibid, at 215, 244–249.

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comparative, critical, feminist, jurisprudential or historical scholars.[4] Their main primary source materials are legislation, precedent and other legal instruments – that is, law itself[5] – and official sources such as government reports.[6] Their secondary sources are comprised largely of the scholarship of fellow legal academics. And their general objective is to develop what Neil MacCormick termed 'legal knowledge', which results 'from interpretative inquiry into law', whether conceptual, substantively focused[7] or empirical.[8]

It is this collective scholarly activity that, taken together, comprises what is called the 'legal space'. The concept draws loosely on the idea of 'regulatory space', which is a way of envisaging the complex interrelationships of competing organisations within regulatory systems.[9] Within this imagined academic meta-space, there is, rather than regulatory bodies, a wide variety of different and sometimes interconnected subject subspaces, which themselves divide into a multitude of specialisms.[10] Some of these are relatively large, such as tort, contract, family law, EU law and public law, while others – such as environmental law – have only small numbers of scholars working in the field. As expanded on below, scholars also utilise a wide range of research methods to develop different types of legal knowledge in the many and various subspaces and specialisms of the legal space.

The core dynamics of the legal space

Before focusing on environmental law scholarship, the fundamental dynamics of the wider legal space should be explored. Environmental law research does not exist in

4. Or law and economics scholars, governance scholars etc: for discussion of the main approaches to scholarship utilised in UK legal academia, see F Cownie *Legal Academics: Culture and Identities* (Oxford: Hart Publishing, 2004) pp 49–72. See also C McCrudden 'Legal research and the social sciences' (2006) 122 Law Q Rev 632.

5. The idea of legal scholarship as being primarily concerned with legal rules is particularly strong in the context of positivist, doctrinal research: see JN Adams and R Brownsword *Understanding Law* (London: Sweet and Maxwell, 1999) p 30.

6. For example, official reports that provide socio-legal scholars with data on how law and legal processes operate.

7. N MacCormick *Institutions of Law: An Essay in Legal Theory* (Oxford: Oxford University Press, 2007) p 290. For analysis of the nature of the legal knowledge that has been built up in these different areas, see chs 10–13.

8. Ibid, pp 299–300.

9. See further, on regulatory space, L Hancher and M Moran 'Organising regulatory space' in L Hancher and M Moran (eds) *Capitalism, Culture and Economic Regulation* (Oxford: Clarendon Press, 1989) pp 276–279; and C Scott 'Analysing regulatory space: fragmented resources and institutional design' (2001) (Summer) Pub L 329.

10. For example, private law scholarship encompasses tort, restitution, contract, the law of persons, property law, trust law, succession law, company and commercial law, employment law and the law of actions. Public law scholarship, among other things, includes in its subject matter the law of EU institutions, UK constitutional law, local government law, revenue law, administrative law, the law governing the legal system and human rights law. Criminal law scholarship analyses not only law that defines and governs individual crimes, but also the laws of criminal evidence, procedure and process. See MacCormick, above n 7, p 290. For a critical analysis of the tendency of legal education to divide the study of law into separate subdisciplines, thereby blocking integrated thinking about law's relationship with the environment, see Graham, above n 1, at 405–413.

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an intellectual vacuum and reflecting on its context brings some important issues into sharper relief. How, then, is the legal space configured internally? Its core is surely the analysis of the work of senior judges, the courts (particularly the supreme courts) and legislators in the largest and most highly developed subject subspaces. This is, self-evidently, the pre-eminent activity in UK legal scholarship. Judges and courts, through the common law, statutory interpretation and the operation of the justice system, have long exercised great power and responsibility in creating, developing and enforcing the law of the land in core subject areas such as criminal law, public law, family law, property law, contract, tort, and company and commercial law: much legal scholarship is therefore focused on studying this. The analysis of legislation in these areas, which often builds on common law principle and is mediated and implemented by the courts, is also a key activity for legal scholars.

Moreover, because the core subjects are the main areas of legal practice, they are compulsory in professionally accredited undergraduate law degrees, the delivery of which is the staple business of most modern UK law schools.[11] The majority of academics teaching them, most of whom are themselves graduates of law schools,[12] naturally develop research specialisms in them: the significance of the symbiosis of research and professionally accredited teaching in shaping the internal dynamic of the legal space should not be underestimated.[13] And although scholars working in the core subjects are not directly part of the interconnected worlds of the senior judiciary, the courts, legislators and legal practice, they frequently interact closely with them (intellectually if not physically or ideologically, and even if they are critical of them). This association with powerful external authority figures such as judges and legislators, albeit in a junior role, can be said to validate and buttress the status of leading scholars and scholarship in these areas.

In this context, the narrow focus of much UK legal scholarship on analysing and systematising what is happening within the core subjects,[14] using a combination of

11. Indeed, Peter Birks went so far as to argue that a 'sound case can be made for the view that the … [core] subjects … are genuinely foundational to the western legal tradition': see P Birks 'A decade of turmoil in legal education' in P Birks (ed) *Examining the Law Syllabus: Beyond the Core* (Oxford: Oxford University Press, 1993) p 10. Note Anthony Bradney's contrasting argument that the focus on the requirements of the legal profession should be of no particular importance in the provision of a modern, 'liberal' legal education: for him, it 'is not what is studied but the manner in which something is studied that matters': see A Bradney *Conversations, Choices and Chances: The Liberal Law School in the Twenty-First Century* (Oxford: Hart Publishing, 2003) pp 86–87. On the sometimes challenging status of the university law school as 'part of the legal profession' and 'part of a university', see R Collier 'The changing university and the (legal) academic career – rethinking the relationship between women, men and the 'private life' of the law school' (2002) 22 Legal Stud 1 at 5. For information on the professionally qualifying subjects for the legal profession in England and Wales and Scotland, see http://www.sra.org.uk/students/academic-stage.page (accessed 11 August 2015) and http://www.lawscot.org.uk/education-and-careers/studying-law/currently-studying-the-llb/subjects-you-need-to-become-a-solicitor/ (accessed 11 August 2015).

12. For discussion of why law graduates go on to become legal academics, see Cownie, above n 4, pp 79–81.

13. Indeed, it has long been viewed as being of considerable importance. On the relationship between research and teaching in UK law schools, see Bradney, above n 11, pp 110–113, 122–123.

14. See N Duxbury *Jurists and Judges: An Essay on Influence* (Oxford: Hart Publishing, 2001) p 27; and D Vick 'Interdisciplinarity and the discipline of law' (2004) 31(2) J L Soc'y 163 at 177–180. See also Graham, above n 1, at 409–413 for a critical analysis; and P Maharg *Transforming Legal Education* (Aldershot: Ashgate, 2007) p 4.

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the same techniques of doctrinal analysis as those practising law[15] and academic methods such as socio-legal,[16] historical and comparative approaches,[17] has raised uncomfortable questions about the status of law as an academic discipline. Although the imagery is perhaps pejorative, a large proportion of legal scholarship can be viewed as being 'parasitic on practice':[18] much of it is not concerned with the development of new knowledge or data, but with the analysis of what key legal decision takers have done in order to guide what might happen in the future.[19] That said, and while for some the derivative relationship with legal practice has been indicative of law not being a 'real' academic discipline,[20] most modern legal academics would now, given the high academic quality of the best legal research, feel able to acknowledge its importance without qualm. Indeed, writing in 1996, the late Peter Birks went so far as to say that there would be something 'badly wrong' if the 'core of research responsibility' of the modern law school was

15. Doctrinal research is derived from the application of methods used by judges and lawyers in the context of legal practice, by which legal rules embodied in statute or precedent can be evaluated 'to build up a systematic statement of the law in acute form, often combined with proposals of how the law can be beneficially developed in the future': Lord Goff 'Judge, jurist and legislature' (1987) Denning LJ 79 at 92, quoted in Vick, above n 14, at 178. For further reflection on the internal dynamics of doctrinal scholarship, see also McCrudden, above n 4, at 633–636.

16. '… Socio-legal studies embraces disciplines and subjects concerned with law as a social institution, with the social effects of law, legal processes, institutions and services and with the influence of social, political and economic factors on the law and legal institutions … Socio-legal research is diverse, covering a range of theoretical perspectives and a wide variety of empirical research and methodologies.' See Socio-Legal Studies Association Ethics Statement (January 2009), available at http://www.slsa.ac.uk/images/slsadownloads/ethicalstatement/slsa%20ethics%20statement%20_final_%5B1%5D.pdf (accessed 3 March 2014). The term 'socio-legal' can also be used more narrowly to mean research that only uses social science methods: see eg D Campbell 'Socio-legal analysis of contract law' in P Thomas (ed) *Socio-Legal Studies* (Aldershot: Dartmouth, 1997) p 247. In the UK, the SLSA's broad-church definition is now the norm.

17. For discussion of the mix of methods used in UK legal scholarship, see Cownie, above n 4, pp 54–57.

18. WT Murphy and S Roberts 'Introduction' (1987) 50 Mod L Rev 677 at 680.

19. For discussion of the relationship between legal scholarship and practice, see Vick, above n 14, at 177–181.

20. Arguably, the connection with legal practice contributed to a lack of self-confidence on the part of some legal scholars in the UK relative to their colleagues in more established academic disciplines: see Bradney, above n 11, pp 2–17; see also Cownie, above n 4, p 198. The view expressed by Harold Laski, a prominent left-wing thinker in the 1930s and 1940s, that most UK legal academics were 'a very inferior set of people who mainly teach because they cannot make a success of the bar' cast a long shadow: see Duxbury, above n 14, p 71; and Bradney, above n 11, pp 2–3. For similarly lacerating views, see T Becher *Academic Tribes and Territories* (Buckingham: Open University Press,1989) p 30: 'The predominant notion of academic lawyers is that they are not really academic … their scholarly activities are thought to be unexciting and uncreative, comprising of a series of intellectual puzzles scattered among large "areas of description".' See also Bradney, above n 11, pp 2–17.

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> wholly unrelated to, and could be ignored by, the exercise of adjudication going on in the courts and the advisory work of lawyers which is always ultimately focused on the likely outcome of adjudication.[21]

Birks' related inference that doctrinal scholarship remains the 'true' core of legal scholarship and that other research methods, such as socio-legal studies, are therefore peripheral[22] can perhaps be left to one side. Nowadays, in part because of the wide definition of socio-legal research developed by the UK Socio-Legal Studies Association ('SLSA') – it happily embraces a diverse range of perspectives and methodologies concerned with law[23] – the majority of UK legal academics, including those working in core subject areas, would probably view themselves as socio-legal scholars, albeit that doctrinal methods derived from legal practice are still key techniques in their research toolkits. The long-running conflict between doctrinal and socio-legal scholars, which was often heated,[24] has now largely burnt out and there is mainstream acceptance that legal research encompasses liberal and pluralistic approaches to method.[25] Thus, modern socio-legal studies can be said to be reforming and building on the doctrinal foundation of legal scholarship by integrating it into socio-legal research rather than discarding it,[26] while much doctrinal analysis routinely integrates socio-legal and other perspectives.[27] But, in any case, an important distinction can be made between research *method* and research *subject matter*. In the context of the latter, Birks was surely right to identify adjudication by courts as being a fundamental concern of core UK legal scholarship. And today, there is still a symbiotic (if not parasitic) relationship between a large proportion of legal scholarship at the centre of the legal space and the practice of

21. P Birks 'Introduction' in P Birks (ed) *Pressing Problems in the Law Volume 2: What Are Law Schools For?* (Oxford: Oxford University Press,1996) p ix. Peter Birks was latterly Professor of Civil Law at the University of Oxford and was a highly influential President of the Society of Legal Scholars. For him, the close intellectual relationship with legal practice provided law with its special and (perhaps peculiar) character as an academic discipline. He went on to argue that: '… legal research which criticises, explains, corrects legal doctrine is still and must remain the heart of the law school's research. If our work is ever useless to judges and practising lawyers, we will have cut adrift from our foundations.' See also Vick, above n 14, at 177–181.

22. See Birks, ibid – it should be acknowledged that Birks also argued for a catholic approach to method and viewed the distinction between core and periphery as divisive and therefore unhelpful.

23. As articulated in the Socio-Legal Studies Association Ethics Statement (January 2009), above n 16.

24. Doctrinal research has been criticised by some socio-legal scholars for being old-fashioned, divorced from its social, economic, political, moral and theoretical contexts, intellectually narrow, and, in its least distinguished forms, descriptive 'case law journalism': see J Adams and R Brownsword *Understanding Law* (Sweet and Maxwell: London, 1991) p 30; and R van Gestel and H Micklitz 'Revitalising doctrinal research: what about methodology? (2004) European University Institute Working Papers Law 2011/05 at 2. Socio-legal scholarship has, in its turn, been criticised by some as lacking firm academic and methodological foundations and for the uncritical and haphazard adoption of theories from other disciplines: see eg Cownie, above n 4, pp 68–69.

25. McCrudden, above n 4, at 642–646.

26. For discussion, see Cownie, above n 4, pp 55–58; S Bartie 'The lingering core of legal scholarship' (2010) 30(3) Legal Stud 345 at 354–359; and M Keyes and R Johnstone 'Review of *Legal Academics*: *Cultures and Identities* by Fiona Cownie' (2005) 27 Sydney L Rev 377 at 379. M Siems 'Legal originality' (2008) 28 Oxford J Legal Stud 147 at 148–152 and Vick, above n 14, at 165–166 also point to the continuing importance of doctrinal methods as part of what Vick called the 'interdisciplinary spectrum' in legal scholarship.

27. McCrudden, above n 4, at 644–645.

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law – even although much of the research is now broadly socio-legal in character, rather than solely doctrinal.[28]

2. LOCATING UK ENVIRONMENTAL LAW SCHOLARSHIP: AT THE MARGINS OF THE LEGAL SPACE

Thinking about this wider legal space provides important insights into environmental law scholarship. Fisher et al have, of course, already argued that UK environmental law scholarship can be perceived as a marginal area of study on the grounds that it is a small specialism involving relatively few scholars, it appears disconnected from debates on methodology in mainstream legal scholarship, it has its roots in radical environmentalism and it features infrequently in mainstream law journals.[29] They point to the fact that environmental law is often taught to non-law students as well as those taking professionally accredited law degrees:[30] it should be added that it is not one of the prescribed subjects for professional qualification as a lawyer in either England and Wales or Scotland.[31] And while there are environmental lawyers in practice, environmental law is, by comparison with large core subject subspaces or specialisms such as tort, criminal law or commercial law, a small part of UK legal practice. In itself, this pushes environmental law towards the margins of the legal space. There is weight in all of these points, but it is argued that identifying key structural features inherent in environmental law scholarship that explain why it is marginal in relation to the core of the legal space raises more fundamental issues about its nature and possible future development.

(a) Analysing UK environmental law scholarship: the 'classic/novel' taxonomy

What, then, might these structural features be? Providing a definition of environmental law itself is extremely difficult, for it is a vast, amorphous conglomeration of laws and regulatory systems that relate, directly and indirectly, to the environment. Indeed, it has been said that it 'encompasses, actually or potentially, everything that may ever be encompassed by law in general'.[32] It is more straightforward, however, to identify the main approaches taken in environmental law scholarship, although it too is highly diverse. This section therefore develops a taxonomy that distinguishes between what is called 'classic' and 'novel' environmental law scholarship, and explores where these two categories are situated in the wider legal space.

28. Thus, the overview report of the UK Research Excellence Framework 2014 ('REF 2014') law sub-panel commented that it had reviewed a 'large volume of outputs covering several core areas of law', which included criminal law, criminal justice, public law and human rights, commercial law and EU law. Tort law had 'showed a revival of scholarly interest', although the volume of outputs submitted in property law and some 'more traditional' areas of mercantile law was 'surprisingly low'. The sub-panel also remarked on 'a notable trend towards more broadly "contextual" approaches to the discussion of legal issues' and the increasing influence of socio-legal research methods and techniques. There were still, however, many 'impressive examples of legal scholarship in the more traditional and classical modes'. See *REF 2014*: *Overview Report by Main Panel C and Sub Panels 16 to 26* (January 2015) p 71. See also Vick, above n 14, at 177–181.

29. Fisher et al, above n 1, at 221–223.

30. Ibid, at 221.

31. For information on the prescribed professional subjects, see above n 11.

32. A Philippopoulos-Mihalopoulos 'Towards a critical environmental law' in A Philippopoulos-Mihalopoulos (ed) *Law and Ecology: New Environmental Foundations* (London: Routledge, 2011) p 18.

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On first inspection, UK environmental law scholarship includes a wide range of subject matters and research methods. Some scholars research practice-relevant areas such as remedies for environmental harm under tort,[33] public nuisance,[34] planning law[35] waste law[36] or public law aspects of environmental law,[37] where analysis of judicial decisions, statutory interpretation and the role of courts and tribunals is important. Others focus on the supranational level,[38] and in this context it should be acknowledged that the decisions of the European Court of Justice[39] and a range of other international tribunals[40] have made significant contributions to the development of environmental law.

33. See J Steele 'Assessing the past: tort law and environmental risk' in T Jewell and J Steele (eds) *Law in Environmental Decision-Making* (Oxford: Clarendon Press, 1998) ch 4.

34. See generally R Malcolm and J Ponting 'Statutory nuisance: the sanitary paradigm and judicial conservatism' (2006) 18 J Envtl L 37; M Lee 'Personal injury, public nuisance and environmental regulation' (2009) 20 King's L J 129; and N Papworth 'Public nuisance in the environmental context' [2008] J Pub L 1526.

35. See eg R Duxbury *Telling and Duxbury's Planning Law and Procedure* (Oxford: Oxford University Press, 2012).

36. For discussion of the legal definitions of waste, see D Wilkinson 'Time to discard the concept of waste?' (1999) 1 Envtl L Rev 172; S Tromans 'EC waste law – a complete mess?' (2001) 13 J Envtl L 133; I Cheyne 'The definition of waste in EC law' (2002) 14 J Envtl L 61; and R Lee and E Stokes 'Rehabilitating the definition of waste: is it fully recovered?' (2008) 8 Yearbook Eur Envtl L 162.

37. Which involves discussion of a range of issues: for example, legal provision for public participation in decision taking and access to justice in environmental matters under the Aarhus Convention, EU law and domestic legislation; regulation, governance and enforcement; judicial review of administrative action; and human rights aspects of environmental law. On which, generally and respectively, see: M Lee and C Abbot 'The usual suspects? Public participation under the Aarhus Convention' (2003) 66 Mod L Rev 80; J Steele 'Participation and deliberation in environmental law: a problem solving approach' (2001) 21 Oxford J Legal Stud 415; N Gunningham 'Environmental law, regulation and governance: shifting architectures' (2009) 21 J Envtl L 179; R Macrory *Regulation, Enforcement and Governance in Environmental Law* (Oxford: Hart Publishing, 2010); R Macrory *Consistency and Effectiveness: Strengthening the New Environmental Tribunal* (London: UCL Centre for Law and the Environment, 2011); R Moules *Environmental Judicial Review* (Oxford: Hart Publishing, 2011); and K Morrow 'Worth the paper they are written on? Human rights and the environment in the law of England and Wales' (2010) 1 J Hum Rts Envt 66.

38. That is, EU and international law, both of which could be considered topics in their own right. On the former, see generally L Kramer *EU Environmental Law* (London: Sweet and Maxwell, 2012) and L Kramer 'Thirty years of EC environmental law: perspectives and prospectives' (2002) 2 Yearbook Eur Envtl L 155; I von Homeyer 'The Evolution of EU Environmental Governance' in J Scott (ed) *Environmental Protection: European Law and Governance* (Oxford: Oxford University Press, 2009); and H Vedder 'The Treaty of Lisbon and European environmental law and policy' (2010) 22 J Envtl L 285. On the latter, see generally P Birnie, A Boyle and C Redgwell *International Law and the Environment* (Oxford: Oxford University Press, 2009); D Bodansky *The Art and Craft of International Environmental Law* (Cambridge, MA: Harvard University Press, 2010); and P Sands and J Peel *Principles of International Environmental Law* (Cambridge, UK: Cambridge University Press, 2012).

39. See eg F Jacobs 'The role of the ECJ in the protection of the environment' (2006) 8 J Envtl L 185; and Tromans and Cheyne, above n 36.

40. For example, the International Court of Justice, the World Trade Organisation dispute settlement mechanism, the International Tribunal for the Law of the Sea and the European Court of Human Rights. For an excellent analysis of this complex area, see generally T Stephens *International Courts and Environmental Protection* (Cambridge, UK: Cambridge University Press, 2009).

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Much modern UK environmental law is, of course, cast in statute by either the UK Parliament or the devolved legislatures after promulgation in EU directives.[41] And while, as inferred above, courts and tribunals have a significant role in determining disputes and in the development of the law in areas such as planning,[42] statutory nuisance,[43] waste law[44] and water pollution offences,[45] in other areas, such as integrated pollution control regulation,[46] air quality,[47] climate change[48] and genetically modified organisms,[49] they are often excluded from adjudicating on substantive merits and are largely restricted to judicial review of administrative action and enforcement.[50] A number of scholars therefore specialise in rapidly developing statute- and regulation-based fields that have relatively few justiciable issues and limited interaction with courts, judges and lawyers: as is expanded on below, those working in these areas often explore different aspects of environmental governance.

In this context, Macrory's elaboration of Burke's distinction between the 'old' and the 'new' environmental agendas offers a valuable perspective on a key structural distinction within environmental law scholarship,[51] which facilitates understanding of its relationship with the wider legal space.

The old agenda is concerned with areas such water pollution or the disposal of waste. Here, the environmental issues and problems are well understood, the science is relatively established and there is a consensus on the part of policy makers, the public

41. For discussion of the significance of the EU law dimension in UK environmental law, see D Wyatt 'Litigating community environmental law – thoughts on the direct effect doctrine' (1998) 10 J Envtl L 9 at 10.

42. See Duxbury, above n 35, chs 19, 20.

43. See above n 34.

44. See Wilkinson, above n 36; Tromans, above n 36; and Cheyne, above n 36.

45. See for discussion, E Fisher, B Lange and E Scotford *Environmental Law* (Oxford: Oxford University Press, 2013) pp 583–597; and D Wilkinson 'Causing and knowingly permitting pollution offences: a review' (1993) 4(1) Water L 25.

46. For comprehensive general discussion, see S Bell, D McGillivray and OW Pederson *Environmental Law* (Oxford: Oxford University Press, 2013) ch 14.

47. Fisher, Lange and Scotford, above n 45, p 614.

48. While some have contended that courts can have a potentially significant role in the development of climate change law, Fisher, Lange and Scotford argue that '[w]hatever the merits of this scholarly debate, climate change litigation has been limited and fragmented': ibid, p 639. For a discussion of developments in a range of jurisdictions, see R Lord et al *Climate Change Liability: Transnational Law and Practice* (Cambridge, UK: Cambridge University Press, 2011).

49. Although the EU legislation on GMOs has given rise to some European litigation concerning the distribution of power between the EU and Member States and the interpretation of EU law (see principally Case C-304/02 *European Commission v France*; Joined Cases C-439/05 and C-454/05 P, *Land Oberosterreich and Another v Commission of the European Communities* [2007] ECT I -7141; and Case C-165/08 *Commission of the European Communities v Republic of Poland* [2009] ECR I-6843), its function is making procedural and institutional provision for the controlled release of GMOs by the EU and member states (see G Little 'The regulation of genetically modified organisms as an environmental risk' in F McManus (ed) *Environmental Law* (Edinburgh: W. Green, 2007) ch 7). The role of domestic courts under the statutory regime is therefore limited.

50. For examples, see above nn 46–49.

51. Macrory, above n 1, at 254; and R Macrory *Regulation, Enforcement and Governance in Environmental Law* (Oxford: Hart Publishing, 2nd edn, 2014) p 245.

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and industry that regulation is appropriate: as Macrory puts it, 'the basic legal toolkit is not called into question'.[52] Core legal concepts, such as the rights of the person, property rights, liability, compensation, criminal responsibility, *vires* and access to justice have clear utility and significance. Indeed, the courts have been applying them in environmental areas such as pollution control and nuisance since the early nineteenth century.[53]

By contrast, the new environmental agenda involves analysis of the governance of contested meta-level issues such as sustainable development, climate change and biodiversity. Here, scientific understanding might be incomplete or disputed and the policy solutions may be far more diverse and controversial than in old agenda areas:[54] as is expanded on below, legal research in these new areas is inherently more problematical. Indeed, Macrory suggests that it is 'by no means clear what sort of legal techniques are appropriate, or indeed what role law really has in their resolution'.[55]

(I) CLASSIC ENVIRONMENTAL LAW SCHOLARSHIP

Legal research that is concerned with the old environmental agenda can be characterised as 'classic' environmental law scholarship: broadly speaking, it is a small field of scholarship that gives the analysis of legal principle and the activities of courts a profile similar to that which exists in larger, more mainstream subject areas, and its focus and nature is comparable to other subjects at or near the core of the legal space. Classic environmental law scholarship is therefore not a chronological definition and it encompasses the use of a range of research methods. It is not described as classic because it adheres to traditional doctrinal methods but because it has intellectual contiguity with the research activity at the core of the legal space – much of which is now, as discussed earlier, broadly socio-legal in approach.

Thus, for example, property rights are viewed by some as being an obstacle to environmental protection,[56] while others argue that they have the potential to strengthen it.[57] There is considerable scholarship analysing the impact of the principles of tort law on environmental law,[58] and private and public nuisance (the latter being both a crime and in certain contexts a tort) have obvious relevance in the environmental context.[59] Judicial review of administrative action is also important in environmental law given its statutory basis and the role of state regulators in environmental governance.[60]

Inevitably, therefore, classic environmental law scholarship is often derivative of more established core scholarship. This is not to argue that it does not augment and develop core scholarship or deepen understanding of environmental law in important ways: much classic environmental law scholarship is of a very high standard. Nonetheless, it should

52. Macrory (2014), ibid.
53. S Coyle and K Morrow *The Philosophical Foundations of Environmental Law* (Oxford: Hart Publishing, 2004) pp 108–109.
54. Macrory (2014), above n 51, p 245.
55. Macrory, above n 1, p 254: see also ibid.
56. See Coyle and Morrow, above n 53, p 157. For a critical analysis of the anthropocentric nature of traditional approaches to property law, see Graham, above n 1.
57. C Rodgers 'Nature's place? Property rights, property rules and environmental stewardship' (2009) 68 Cambridge L J 550 at 557–558. Concepts of property rights are also closely intertwined with the environmental idea of the 'Commons': for discussion, see C Rodgers 'Reversing the "Tragedy" of the Commons? Sustainable management and the Commons Act 2006' (2010) 73 Mod L Rev 461 at 461, 463–464.
58. See Steele, above n 33.
59. See Lee, above n 34, and Papworth, above n 34.
60. See Moules, above n 37.

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be acknowledged that the main legal principles in play are often not originally or intrinsically 'environmental' in nature, but are derived from other core subjects. Thus, for example, Cane has queried whether environmental cases involving tort are primarily about environmental issues rather than tort.[61] Similarly, Lee makes the point that public and private nuisance have never been 'about' environmental law,[62] and the same could be said of judicial review of the decisions of environmental regulators. For this key structural reason, classic environmental law scholarship may therefore be viewed as being marginal in relation to the core of the legal space, as it lacks clear intellectual distinctiveness: what gives it an identity as a specialism is its subject matter, rather than the legal principles that are at issue.

(II) NOVEL ENVIRONMENTAL LAW SCHOLARSHIP

As Macrory suggests, legal research into new agenda issues – or what is called 'novel' environmental law scholarship – presents different, more fundamental challenges. Why is this? A key reason is surely that it has relatively little connection with core legal principles or with courts and adjudication. While issues such as the governance and regulation of climate change raise huge social, political and moral controversies and give rise to treaty agreements and EU and domestic legislation, they are, in the UK context at least, for the most part neither addressed through the prism of individuated legal rights and nor are they readily justiciable: they are, to use Fuller's term, strongly polycentric.[63] As a result, in relation to much novel UK environmental law scholarship, specialised legal knowledge and principles – the evaluation of which is the core activity in the legal space – has uncertain relevance in the analysis of the law's content or its underlying objectives.[64] Instead, legal scholars must develop ideas on how to interact with public policy and sometimes competing non-legal economic and social science concepts and methods.[65] This relative lack of connection with the world of legal principle, courts, judges and lawyers is the key difference between novel UK environmental law scholarship and the core of the legal space.

In making this point, it is acknowledged that there are similarities between novel environmental law scholarship and research into subject areas at the core of legal space that also have a high statutory and regulatory content, such as company law. For example, the substantive law is often comprised of complex blends of EU legislation, domestic statutes and administrative rules. Research can involve analysis of a mix of criminal, civil and governance/regulatory/policy issues. Nonetheless, there is still a basic distinction to be made in terms of the subject matter. UK legislation on a new environmental agenda issue such as climate change, which has its origin in international agreements and EU policy, is the consequence of complex, multi-layered decisions made by policy makers, scientific and technical advisers, stakeholders and regulators.[66] It is the

61. P Cane 'Are environmental harms special?' (2001) 13 J Envtl L 3.**111.** .
Lee, above n 34, at 136.

62. Lee, above n 34, at 136.

63. See Fisher, Lange and Scotford, above n 45. For a definition of polycentricity, see L Fuller 'The forms and limits of adjudication' (1978) 92 Harv L Rev 353 at 395. Fuller argued that the more polycentric a situation becomes, the less amenable it is to adjudication: see at 394–404.

64. The difficulties this poses for environmental law scholars are discussed by Fisher et al: see above n 1, at 235–239.

65. Ibid.

66. For a discussion of the conventional UK approach to balancing policy, scientific evidence and industry interests in environmental law, see Bell et al, above n 46, pp 232–234. For a flavour of the complexities involved in this process, see R Macrory 'Loaded guns and monkeys – responsible environmental law' in Macrory, above n 37, p 367, at pp 376–384; and The Royal Commission on Environmental Pollution, 21st Report *Setting Environmental Standards* (1998) CM 4053, chs 1 and 8.

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functional by-product of these decisions and, at the risk of generalisation, its purpose is the implementation of policy based on scientific advice, the balancing of key stakeholders' interests and the utilisation of the most effective regulatory technique.[67] Traditional legal relationships, principles and issues are generally not the 'main event' in legislation of this sort, as they often are in areas such as company law,[68] other than in relation to matters such as enforcement where the legal system has traditionally had a role.[69] In relative terms, specialised legal knowledge and understanding therefore has limited relevance in terms of the content of legislation: much of what the law deals with amounts to what might be called 'non-legal' regulation in that it lacks any significant foundation in or connection with legal principle. In addition, and while there may be scope for judicial review of administrative action in some contexts, and the use of legal skills such as statutory interpretation and drafting, climate change legislation does not provide a significant role for court-based adjudication in dispute resolution.[70] By contrast, in areas such as company law, as in old agenda or classic environmental law, the courts are the most authoritative forum for resolving disputes.

Novel environmental law therefore presents existential challenges for legal scholars. As a result, they have tended to focus on the structures and processes of governance, and a significant body of outstanding work has been done in analysing governance regimes, the design of regulatory models, instruments, the processes of standard setting, the linkages between policy and legal provision and enforcement in the environmental context.[71] It is, however, often difficult for this kind of scholarship to connect its analyses with the intellectual excitement of meta-level debates about the environment. Studies of governance and regulatory structures can seem abstract or technical and far removed from the dramatic challenges posed by environmental change. For while scholarship in environmental sciences, policy studies and economics can address big issues such as the causes of climate change and how society can and should react, legal research necessarily tends to focus narrowly on detailed, follow-up analyses of the legal/regulatory structures and processes that have been put in place to implement society's response. Although this is important in the context of developing understanding of environmental law, it is intrinsically secondary to the main debate, and does not have the same wide resonance.

Moreover, while acknowledging fully the often high quality of environmental governance studies and that scholars in the field have a wide range of different interests and intellectual starting points, it is possible to view many of them as part of, and

67. Bell et al, above n 46, pp 232–266.

68. For example, one of the main reforms introduced by the Companies Act 2006 – the largest statute passed by the UK Parliament – was the creation of a new statutory statement of company directors' duties, many of which were originally fiduciary duties created under the common law.

69. See Macrory, above n 37. Professor Macrory's work on regulatory sanctions has had a significant effect on the environmental enforcement regime in England (and other areas of regulation) via the Regulatory Enforcement and Sanctions Act 2010. There is a strong and influential tradition of legal scholarship on environmental enforcement: see eg K Hawkins *Enforcement and Environment: Regulation and the Social Definition of Pollution* (Oxford: Oxford University Press, 1984).

70. See Fisher, Lange and Scotford, above n 45.

71. See eg Gunningham, above n 37; N Gunningham and P Grabosky *Smart Regulation: Designing Environmental Policy* (Oxford: Clarendon Press, 1998); D Driesen 'Alternatives to regulation? Market mechanisms and the environment' in M Cave, R Baldwin and M Lodge (eds) *Oxford Handbook on Regulation* (Oxford: Oxford University Press, 2009) ch 10; The Royal Commission on Environmental Pollution, above n 66; and Macrory, above n 37.

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therefore broadly derivative of, a wider, diffuse body of scholarship on governance and regulation, as developed in the UK context by Ogus, Baldwin, Black and others.[72] Notwithstanding the valuable contribution that environmental law scholars make to the development of governance and regulatory concepts,[73] much discourse on environmental governance can be seen as drawing on key themes in the broad church of governance scholarship, such as economic[74] and policy[75] justifications for regulation, social theories[76] and concepts of regulatory space and design.[77] This is not to denigrate the work of scholars who are developing diverse strands of law and policy studies and governance/regulatory analysis in the environmental context – much of it is excellent – but it is surely the case that different ideas on governance are its main theoretical drivers, rather than specifically environmental concepts. It might also be observed that the wider body of scholarship on governance is itself at the boundary of where public law theory shades into public administration:[78] this reiterates the marginal status of much novel environmental law scholarship in relation to the core activity of the legal space, notwithstanding that some of it may have significance for policy makers.[79]

(b) Where does environmental law scholarship go from here?

At a more profound level, it is argued that these structural factors raise fundamental questions about the future direction of intellectual travel for environmental law scholarship as a whole: for while classic environmental law scholarship can exist in the legal space, it is, as things stand, likely to continue as a small, specialised and derivative specialism – a scholarly offshoot of the main tree. Novel environmental law scholarship's relative lack of connection with the world of legal principle, judges and the courts means that it is also located at the outer borders of the legal space. For this reason, it is likely to remain of limited significance to core legal scholarship.

These arguments have, it is argued, significant implications for the future of environmental law scholarship and should be acknowledged before it can mature. For this author at least, they lead to the conclusion that if it is to develop, scholars must take a determined step outside the legal space and develop harder, more meaningful academic and intellectual connections with those working in other environmental disciplines. By contrast, Pederson has argued recently that the potential of interdisciplinary working is often exaggerated, and

72. See generally A Ogus *Regulation: Legal Form and Economic Theory* (Oxford: Hart Publishing, 2004); R Baldwin, M Cave and M Lodge *Understanding Regulation: Theory, Strategy, and Practice* (Oxford: Oxford University Press, 2011); R Baldwin, M Cave and M Lodge (eds) *The Oxford Handbook of Regulation* (Oxford: Oxford University Press, 2010); JM Black '"Which arrow?" Regulatory policy and rule type' [1995] Pub L 94; R Baldwin and J Black 'Really responsive regulation' (2008) 71(1) Mod L Rev 59–94; and R Baldwin and J Black 'Really responsive risk-based regulation' (2010) 32 Law & Pol'y 181.

73. Fisher et al, above n 1, at 233.

74. See Ogus, above n 72, ch 3.

75. See C Hilson *Regulating Pollution: A UK and EU Perspective* (Oxford: Hart Publishing, 2000) pp 3–5.

76. For example, risk theories: for a (still) relevant discussion of how risk theories and the perception and communication of risk impact on regulation, see S Krimsky and D Golding (eds) *Social Theories of Risk* (Westport, CT: Praeger, 1992).

77. See above n 9.

78. Fisher et al, above n 1, at 235–239. See also J Scott and D Trubek 'Mind the gap: law and new approaches to governance in the European Union' (2002) 8 Eur L J 1.

79. For example, the work of Neil Gunningham.

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that environmental law scholarship is best thought of as a 'deliberative practice, which speaks to, and takes place within' an 'interpretative community of scholars'.[80] For him, the focus of activity should be on attempts to persuade the community from within, while the community itself should be flexible, open and broad in its approach to scholarship.[81]

It is argued here, however, that – notwithstanding the difficulties inherent in it – working across disciplinary boundaries has a number of important potential benefits. For classic environmental law scholarship, it provides the opportunity to develop distinctive and innovative approaches to method that could not only benefit the specialism and other disciplines, but that could also be of interest and value to scholars elsewhere in the legal academy. And for novel legal scholarship, which has a weak intellectual relationship with the core of legal space and orbits in relative obscurity at the edge of its gravitational pull, exploring how research on environmental governance and regulation can relate to environmental science in particular offers the exciting prospect of more direct engagement with the big themes and issues in environmental debate, rather than focusing inwardly on the technical analysis of governance: for science has long been the core activity in what might be called the wider environmental space.[82]

3. LOOKING BEYOND THE LEGAL SPACE: TOWARDS INTERDISCIPLINARITY

To argue that environmental law scholarship must involve interdisciplinarity is, of course, not new. Heinzerling, for example, has argued that it is 'pervasively interdisciplinary' and that for scholars working in the field 'interdisciplinarity is not a trend: it's a way of life'.[83] It is, however, important to understand what is meant by interdisciplinarity. A commonly accepted definition is that it is a way of doing research that integrates, among other things, techniques, perspectives, concepts and/or theories from more than one discipline to develop knowledge in a way that would be beyond the capacity of a single discipline.[84] Research of this sort that takes place between cognate disciplines such as law and policy is sometimes termed 'moderate' interdisciplinarity, while that which involves working across major disciplinary divides such as

80. Pederson (2014), above n 1, at 424.
81. Ibid and at 435–440.
82. McEldowney and McEldowney, above n 1, at 171. Science should not, however, be assumed to be a monolithic entity. There are differences of emphasis and approach in different scientific disciplines and within the environmental sciences, which are comprised of a range of disciplines: for a discussion of the development of the environmental sciences, see PJ Bowler *The Fontana History of Environmental Sciences* (London: Fontana, 1992).
83. L Heinzerling 'The environment', in P Cane and MV Tushnet (eds) *The Oxford Handbook of Legal Studies* (Oxford: Oxford University Press, 2003) p 701 at p 703.
84. National Academy of Sciences, the National Academy of Engineering and the Institute of Medicine *Facilitating Interdisciplinary Research* (Washington, DC: National Academies Press, 2004) p 2. See also JT Klein *Crossing Boundaries: Knowledge, Disciplinarities and Interdiciplinarities* (Charlottesville, VA: University Press of Virginia, 1996). For a thoughtful analysis of interdisciplinarity in the legal context, see Vick, above n 14, at 181–191: he also highlighted the importance of defining what is meant by it – see at 164–165.

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law and science can be called 'radical' interdisciplinarity.[85] In addition, interdisciplinary research is often distinguished from multidisciplinary and transdisciplinary research. The former draws from a number of disciplines without breaking down the boundaries between them: that is, it provides separate disciplinary perspectives on the issue under consideration.[86] The latter seeks to develop novel approaches and forms of discourse that transcend traditional disciplinary boundaries.[87] In this context, what form does interdisciplinarity take in UK environmental law scholarship?

Given the complexity of environmental issues and the law that relates to and interacts with them, both classic and novel environmental law scholars must have a good understanding of other disciplines, particularly key aspects of science, and be able to integrate them into their work. Novel scholarship also requires expertise in policy and governance, which includes developing an understanding of economics and social science.[88]

Many modern UK environmental law scholars – whether classic or novel – therefore take a range of socio-legal approaches, which by their very nature encourage the use of insights derived from other disciplines to varying degrees: as touched on above, the SLSA defines socio-legal research as embracing disciplines and subjects concerned with the law, the social effects of law and legal systems, the influences of social, political and economic factors on them, and a wide range of research methods.[89]

By way of illustration, and while Fisher et al have noted that there is often an 'unspoken presumption'[90] to the effect that UK environmental law scholarship is somehow disconnected, or at least semi-detached, from methodological debate in mainstream legal scholarship, the methods used by most environmental law scholars writing in the leading and most established specialist UK environmental law journal would seem to fall squarely into the SLSA's broad socio-legal category. Analysis of the 65 full articles[91] published in the *Journal of Environmental Law* ('the JEL') in the years 2009–2013 indicates that 60 could be defined as socio-legal[92] and only five could be described as being predominantly doctrinal.[93] It is, of course, acknowledged that

85. European Science Foundation and European Cooperation in Science and Technology *Responses to Environmental and Societal Challenges for Our Unstable Earth (RESCUE)* (2012) p 48, available at http://www.esf.org/fileadmin/Public_documents/Publications/rescue.pdf (accessed 11 August 2015).

86. Ibid.

87. JT Klein 'Evaluation of interdisciplinary and transdisciplinary research' (2008) 35(2 Suppl) Am J Prev Med s116 at s117. Note that within the sciences, the definition can vary: see eg European Science Foundation and European Cooperation in Science and Technology, above n 85.

88. Fisher et al, above n 1, at 232–233.

89. See the criteria of the UK Socio-Legal Studies Association, above n 16.

90. Fisher et al, above n 1, at 246–247. They argue that the presumption is false.

91. Two papers appearing in the articles section in 2009 were not included in the sample as full articles, as they were short correspondence responses following on from an earlier paper.

92. That is, using the criteria of the UK Socio-Legal Studies Association, above n 16.

93. That is, they were predominantly or entirely composed of doctrinal analysis of legal provision.

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analysis of one journal should be seen in proper context.[94] Nonetheless, it is reasonable to characterise the showcase UK journal for environmental law scholarship, and therefore the intellectual direction of the specialism itself, as being broadly socio-legal in character and, at least in relation to method, part of the mainstream of UK legal scholarship.

Closer scrutiny of the JEL's recent contents also provides further pointers as to the nature and extent of interdisciplinarity in UK environmental law scholarship. A significant proportion of the socio-legal articles published by it involve, to a greater or lesser extent depending on the approach of individual scholars, conventional/doctrinal analysis of substantive law interwoven with policy, governance, regulatory, theoretical or comparative issues, or what might be called 'law in context' scholarship: this would seem to reflect a broader trend in UK legal research.[95] Of the 60 broadly socio-legal articles published in the sample, 38 can be classified as law in context studies, while 18 articles can be said to be concerned predominantly with governance, regulatory, historical, policy or theoretically based discussions. The remaining four focused on research methods.

It is, however, interesting to note that only four articles can be identified clearly[96] as involving actual collaboration between legal scholars and colleagues from different disciplines.[97] In general terms, therefore, the preponderance of research published in the JEL over the 5-year sample period can be characterised as 'solo' socio-legal/law in context scholarship, or 'moderate' interdisciplinarity, embodying the dominant tradition of the lone scholar in legal research. In addition, only one of the published articles in the sample frame made significant use of empirically derived data. This is unsurprising, as most scholars in the legal space generally have graduated from university law schools and have not been formally trained in research methods other than doctrinal techniques derived from legal practice.

In this context, developing a stronger, more 'radical' interdisciplinarity that involves working with those in non-cognate disciplines such as the environmental sciences is challenging. It involves a significant amount of reading, thinking and meeting new colleagues, and a heavy investment of time.[98] And, at a fundamental level, those in other environmental spaces or disciplines must want to be associated with environmental law scholarship. There must be a clear benefit for all in order that meaningful collaboration can take place. Otherwise, it is mere good intention, which is unlikely to lead to anything that is academically significant.

94. Note that Fisher et al analysed the number of environmental law articles published in the period 2000–2007 in generalist law journals, and found that there were relatively few (ie 36) by comparison with four other applied legal subjects. There were, however, proportionately more environmental law articles published in specialist European and international law journals than these other applied subjects (ie 88) during the sample period. See Fisher et al, above n 1, at 222–223.

95. See *REF 2014*, above n 28, p 72. What Fisher et al and Pederson refer to as 'interactional expertise', in which environmental law scholars utilise knowledge from other disciplines without seeking to contribute to those disciplines, can be seen as a feature of law in context scholarship: see Fisher et al, above n 1, at 232 and Pederson (2014), above n 1, at 427.

96. There were 47 sole authored pieces in the overall sample, 42 of which can be identified as having been written by legal scholars: of this last category, 39 were socio-legal in nature. Note that it was not always possible to identify with certainty the disciplinary background of authors from the information provided in the journal and Internet searches. If it was not possible to do so, their outputs were not included: the findings should be interpreted accordingly.

97. There were 18 co-authored articles in total and four that can be identified as having been written entirely by non-lawyers (as individuals or jointly with other non-lawyers). See ibid for the context to the findings.

98. For a detailed discussion, see the National Academies, above n 84, chs 4–6.

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Environmental law research has, of course, established a wider relevance in some areas, particularly in relation to enforcement.[99] That said, it is difficult to devise new ways of getting beyond the safe 'laagers' of small communities of legal scholars in conversation with each other. And there is an obvious problem for those wanting to break out into new areas and connect with other disciplinary spaces. Most will, as legal academics, wish (and indeed need) to continue to use the legal research methods and internal language utilised by scholars closer to the core of the legal space: they lack the background and training to do otherwise. It must therefore be asked how, without reinventing the methodological wheel, existing legal research techniques can become more relevant to those in neighbouring disciplinary spaces and by so doing make a significant contribution to wider environmental discourse.[100] This is a positive challenge rather than an intellectual crisis. It has the potential to encourage the development of new contexts in which legal analysis can be utilised. By doing so, classic and novel environmental law scholarship can not only develop, but can also explore fresh perspectives for the legal academy generally.

4. NEW PERSPECTIVES FOR ENVIRONMENTAL LAW SCHOLARSHIP: LEARNING FROM THE ENVIRONMENTAL HUMANITIES AND SCIENCES

So how is environmental law scholarship to engage with other disciplines? There are, naturally, a number of different courses that can be set and it would be unwise to be prescriptive. This paper, however, focuses on what can be learnt from emerging ideas in other environmental subject areas that are also grappling with the challenges of how to make new intellectual connections beyond disciplinary boundaries.

Lacking a background in social science research methods, many legal scholars may feel a closer intellectual contiguity with the environmental humanities[101] than with social science, and the environmental humanities are also attempting to address the issue of how to utilise their core methods in new, interdisciplinary contexts.

The emerging field of environmental humanities is more than a growing corpus of work within a number of different disciplines: rather, it is an attempt to bring 'various approaches to environmental scholarship into conversation with each other in numerous and diverse ways'.[102] Among other things, environmental humanities seek to add value to high-level environmental debate by facilitating understanding of the philosophical

99. For the leading example, see Macrory, above n 37.

100. A number of scholars have considered this issue. For example, Samuel argues that law is an intellectually closed off 'authority paradigm' as opposed to an 'enquiry paradigm', and as such has little to offer scientists or social scientists: see G Samuel 'Interdisciplinarity and the authority paradigm: should law be taken seriously by scientists and social scientists?' (2009) 36 J L Soc'y 431.

101. That is, disciplines such as environmental history, philosophy and literature.

102. DB Rose et al 'Thinking through the environment, unsettling the humanities' (2012) 1 Envtl Human 1 at 1–2, available at http://environmentalhumanities.org/arch/vol1/EH1.1.pdf (accessed 11 August 2015). See also S Sörlin 'Reconfiguring environmental expertise' (2013) 28 Envtl Sci & Pol'y 14; S Sörlin 'Environmental humanities: why should biologists interested in the environment take humanities seriously? (2012) 62(9) BioScience 788; T Griffiths 'The humanities and an environmentally sustainable Australia' (2007) 43 Aust Human Rev; available at http://www.australianhumanitiesreview.org/archive/Issue-December-2007/EcoHumanities/EcoGriffiths.html (accessed 11 August 2015) – the paper was also published in *The Humanities and Australia's National Research Priorities* (Commonwealth of Australia, 2003) p 13; and DK Swearer 'Introduction' in DK Swearer (ed) *Ecology and the Environment: Perspectives from the Humanities* (Cambridge, MA: Harvard University Press, 2008) pp 9–20.

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and cultural modes of thinking by which humans and their different cultures and societies 'have made themselves at home in a more than human world'.[103] Law is clearly part of this meta–dynamic: for example, its substantive content and the approach of law makers and regulators can be seen as embodying and expressing the anthropocentrism and human exceptionalism that has dominated Western society for millennia. That said, as argued earlier, and notwithstanding the attempts made by a number of environmental law scholars to establish interdisciplinary links with the sciences,[104] it has in the past proved difficult for legal scholarship to make a distinctive impact on high-level interdisciplinary debate.

Environmental science is also in the process of reaching out to the humanities and social sciences. The 2012 'Responses to Environmental and Societal Challenges for our Unstable Earth' ('RESCUE') report, produced by the European Science Foundation and European Cooperation in Science and Technology, argued strongly that the emergence of the concept of the 'Anthopocene' as a new epoch in the Earth's history, in which human activity affects the rate of and ways in which the global environment changes, 'poses fundamentally new challenges and requires innovative ways of thinking and acting'.[105] Understanding therefore needs to be reframed, in order that environmental change is re-conceptualised as a social and human phenomenon, rather than solely as a matter of environmental science.[106] This again emphasises the development of new ways of interdisciplinary working and requires the humanities and social sciences to 'step up'[107] to the complex, long-term challenges involved in making a meaningful contribution to this new, wider debate.[108]

It is vital that UK environmental lawyers play their part in this intellectual paradigm shift.[109] As already argued, doing so may have significant benefits for both classic and novel research. More broadly, it would enable UK environmental law scholarship to contribute to interdisciplinary efforts to address major, existential environmental challenges such as climate change: only legal scholars can realise law's potential to facilitate understanding of how society can and should address environmental problems. In this context, therefore, what can environmental law scholarship learn from ongoing interdisciplinary developments in the humanities and sciences in order to make a valuable contribution?

103. Rose et al, ibid, at 2.
104. Eg McEldowney and McEldowney, above n 1.
105. European Science Foundation and European Cooperation in Science and Technology, above n 85, p 3.
106. Ibid, pp 5, 12–13. See also G Palsson et al 'Reconceptualising the "Anthropos" in the Anthropocene: integrating the social sciences and humanities in global environmental change research' (2013) 28 Envtl Sci & Pol'y 3; P Holm et al 'Collaboration between the natural, social and human sciences in global change research' (2013) 28 Envtl Sci & Pol'y 25; Sörlin (2013), above n 102; JG Speth *The Bridge at the End of the World: Capitalism, the Environment and Crossing from Crisis to Sustainability* (New Haven, CT: Yale University Press, 2008); and P Ehrlich and D Kennedy 'Millennium assessment of human behavior' *Science* 22 July 2005 at 562.
107. Palsson et al, ibid, at 4.
108. Sörlin (2013), above n 102, at 22.
109. Indeed, in addition to Sörlin, ibid, Holm et al, above n 106, at 26, cite law as one of the important disciplines that can help 'to fully understand Earth systems and human motivation and to guide decision-makers'.

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(a) Perspectives from the environmental humanities

Increasingly, scholars are arguing[110] that the humanities should embrace the growing understanding on both sides of the sciences/humanities divide that the complexity of science and the natural world cannot be separated from human perceptions of it: perceptions and knowledge must be interpreted and judged, and this provides humanities scholars with the opportunity to utilise their distinctive insights and methods in a new interdisciplinary context. Three key approaches in humanities research[111] offer particularly valuable perspectives for environmental law scholars.

First, environmental scientists often think in terms of very long timescales. Their focus is on interactions between species, the cycles of nature and other environmental phenomena that provide evidence of pollution and climate change: the consequences of problems such as radioactive waste or greenhouse gas emission may play out over hundreds to millions of years.[112] By contrast, the humanities specialise in analysing time spans of centuries or human lifetimes, and can therefore set human activity in the context of environmental change. By doing so, they can bridge the intellectual gap between environmental and human timescales and deepen understanding of society's complex interrelationship with environmental problems.[113]

Environmental historians, for example, often have human interaction with the physical environment – or an aspect of it, such as a particular landscape – as their focal point for framing research questions and therefore methodology.[114] Working over defined time spans and sometimes in conjunction with scientists, researchers can then explore the interaction between human activities such as land, resource and energy use and the environment itself.[115]

Depending on the landscape and period under consideration, there is clear potential for both classic and novel analyses of law to contribute to studies of this sort. Indeed, environmental historians often touch on law and regulation, albeit usually in ways that would seem simplistic to legal scholars.[116] Doing so would not require a radical shift in legal methodology: rather, it would require starting from alternative premises and resetting what many environmental law scholars already do in a different context. As

110. See eg above n 102.

111. For discussion, see Griffiths, above n 102, at 3–5.

112. See Griffiths, above n 102, at 4; and ML McInney, RM Schioch, L Yonavjak *Environmental Science: Systems and Solutions* (Burlington, MA: Jones and Bartlett; 2013) p 579.

113. For a thought-provoking discussions, see JR McNeill *Something New under the Sun* (New York: WW Norton, 2000), ch 1; and Griffiths, ibid. For wide-ranging analysis of the interconnection of environmental and human timescales, see N Roberts *The Holocene: An Environmental History* (Oxford: Wiley-Blackwell, 2014).

114. See eg BW Clapp *An Environmental History of Britain Since the Industrial Revolution* (London: Longman, 1994); IG Simmonds *An Environmental History of Great Britain from 10,000 Years Ago to the Present* (Edinburgh: Edinburgh University Press, 2001); and J Sheail *An Environmental History of Twentieth Century Britain* (Basingstoke: Palgrave Macmillan, 2002). Roberts takes a long-term approach, and combines natural and human histories to arrive at his research questions: see Roberts, ibid, ch 1. Worster has sought to link the environment with religious, political and ethical traditions: see D Worster 'Nature, liberty and equality' in Swearer, above n 102, pp 37–47.

115. See eg P Warde *Energy Consumption in England and Wales, 1500–2000* (Naples: Consiglio Nazionale delle Ricerche, CNR, 2008).

116. For example, Clapp, above n 114, makes frequent reference to environmental legislation without analysis of either its substance or of its effectiveness as a means of influencing human impact on the environment.

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outlined by Fisher, Lange and Scotford,[117] the overall objective of modern environmental law scholarship can be characterised as the analysis, using a range of different methodologies, of 'the law concerned with environmental problems'.[118] This is, of course, an extremely broad and inclusive objective, but it can be broken down further. They do this in a taxonomy of broad research questions that environmental law scholars might ask, which is centred on three main headings: the nature of the environmental issue in dispute; the relevant legal concepts; and the application of relevant law to particular environmental problems.[119] Within these general headings, there are wide-ranging research issues, some of which might be viewed as being predominantly socio-legal and others as doctrinal: for example, the analysis of conflicts between the different parties involved in environmental disputes; the role and power of the state or business interests; the way in which law and regulatory systems can shape understandings of scientific or environmental issues; the analysis of relevant law, which can be combined with comparative and cultural perspectives; the effectiveness of legal provision; and the role of law reform in effecting social change.[120]

It is not difficult to see how historical analysis of these sorts of issues, combining doctrinal and socio-legal approaches, could make a valuable contribution to, for example, deepening understanding of the environmental history of industrial development. By linking with environmental historians or utilising their methodologies, legal scholars could therefore develop their specialism and add value to interdisciplinary environmental debate. Nor should it be thought that historically based studies are irrelevant to modern science and policy making. As Smout has argued persuasively, 'history is certainly relevant, simply because environmental change by definition is something that happens historically, over time, and to ignore a time dimension is to deprive its study from its context'.[121]

Secondly, the centrality of storytelling, or narrative, in the humanities also provides valuable insights for environmental law scholarship. The humanities know it to be a refined and powerful disciplinary tool that can change people's actions and influence future events. Through story, complex issues and truths are brought and carried along together in a way that has deep cultural resonance, and that is accessible and made significant for ordinary people.[122] There is also a fundamental distinction between scientific method and narrative: the former separates and tests its subjects individually, while the latter brings together and connects a multiplicity of issues. The humanities can therefore make a valuable contribution by contextualising and popularising

117. Fisher, Lange and Scotford, above n 45, pp 18–20.
118. Ibid, p 18.
119. Ibid, p 19.
120. Ibid.
121. TC Smout *Exploring Environmental History: Selected Essays* (Edinburgh: Edinburgh University Press, 2009) p 5.
122. For discussion, see Griffiths, above n 102, at 4; and L Robin and D Connell 'History and the environment' in RQ Grafton, L Robin and R Wasson (eds) *Understanding the Environment: Bridging the Disciplinary Divides* (Sydney: University of New South Wales Press, 2005) pp 11–12. See also J Shaw 'Story streams: stories and their tellers' in J Shaw, P Kelly and LE Samler (eds) *Storytelling: Critical and Creative Approaches* (Basingstoke: Palgrave Macmillan, 2013).

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scientific research through narrative: both methods can complement each other synergistically.[123]

Again, it is possible to see how legal scholarship can draw on this insight and contribute to the dynamic. Clearly, environmental law scholarship is not fictional storytelling. It is, however, narrative and its interrelationship with the environmental humanities can be located within Cover's cultural theory of *nomos*.[124] According to this, the *nomos* is the normative universe that we inhabit, and of which law is part: within it, 'the rules and principles of justice, the formal institutions of law, and the conventions of a social order' are important, but nonetheless form only a 'small part of the normative universe that ought to claim our attention'.[125] Fundamental to the *nomos* is narrative. In the legal context, 'no set of legal institutions or prescriptions exist apart from the narratives that locate it and give it meaning'.[126] Narratives therefore give meaning to the law and become a world that we inhabit, rather than a mere system of norms: in this way, law and narrative are 'inseparably related'.[127] Cover argued that every prescription (including legal ones) needs to be located in the normative universe, as must the humanities.[128] In this context, environmental law scholars can therefore seek to link legal analysis and environmental humanities within the broader narrative universe. How can this be done? One way is to recognise that legal scholarship, as narrative, also has the potential to perform the same important function as story. The narrative of law and its scholarship is part of society's relationship with environmental change. Socio-legal scholarship can provide narratives that bring together complex legal and non-legal issues relating to environmental problems and the human conflicts associated with them. It can challenge assumptions and orthodoxies by, for example, highlighting the distinction between political or scientific narratives and the normative reality of what has been enacted as law. It can draw out and evaluate the vested interests, imbalances of power and commercial, political and scientific dynamics that shape human interaction with the environment through legal and regulatory structures and processes. By so doing, albeit in a different way from storytelling narratives, environmental law scholarship can also complement scientific method because it can combine and synthesise a wide range of themes and issues, make valuable connections and provide insights: moreover, as with historical research, it is not impenetrably technical and is therefore accessible to a wide range of disciplines and readers.

The third contribution that the humanities can make in discourse with science is that they are able to set science and its methods in broader human and social contexts, and by so doing provide valuable critiques of them.[129] Clearly, environmental law scholarship cannot do this in the way that, for example, the philosophy of science can.[130] But there are perhaps ways in which lawyers can provide valuable lateral and reflective critiques of scientific method. In this context, John and Sharron McEldowney have made a powerful call for the further development of a truly interdisciplinary reflexive discourse between environmental lawyers and scientists.[131] They examine the ways in which

123. Griffiths, above n 102, at 4.
124. R Cover '*Nomos* and narrative' [1983] 97(4) Harv L Rev 4.
125. Ibid, at 4.
126. Ibid.
127. Ibid, at 5.
128. Ibid.
129. Griffiths, above n 102, at 5.
130. For discussion, see A Bird *The Philosophy of Science* (Abingdon: Routledge, 1998) chs 5–8.
131. McEldowney and McEldowney, above n 1, at 196–198.

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collaboration between scientists and lawyers has played a key role in the development of both classic environmental law such as nuisance and public health legislation and novel environmental law.[132] While many of their arguments focus on outlining the importance of environmental law scholars cultivating a proper appreciation of the centrality of science in the development of environmental law, they also highlight the potential that interdisciplinary and holistic working involving environmental lawyers, scientists and others has in giving 'rise to an accountable and qualitative analysis in the functioning of the science base as part of its application in environmental law'.[133] That is, environmental law scholars can use legal methodologies to make a valuable contribution to science and to wider holistic debate and understanding, rather than remaining within the comfort zone of the legal space. The McEldowneys go on to argue persuasively that one way in which this process could be initiated would be through in-depth case studies that could analyse environmental problems with the objective of illustrating how interdisciplinary collaborations between lawyers, regulators and scientists have either succeeded or failed.[134]

(b) Perspectives from environmental sciences

The RESCUE report pursues themes similar to those addressed by the humanities, although it approaches them in different ways. Its focus is more on exploring the meta-level global change issues that can be addressed through interdisciplinary research involving the humanities, rather than the narrower question of how the humanities can link with environmental science. These include analysing the part played by culture, values and behaviour in creating and responding to global change; understanding the social processes by which the problems associated with global change and the solutions to them are 'framed' socially, and how the ways in which this process is managed and communicated can impact on society's response to them; and evaluating and understanding the ways in which institutions interact with society and the process of societal change.[135] Environmental law scholarship, whether novel or classic, socio-legal or doctrinal can, however, again clearly play a part in developing understanding of these issues. As inferred above, law is one of society's ways of mediating culture, articulating values and governing behaviour. It is therefore a key part of society's attempts to frame, manage and communicate its response to global challenges, and legal and regulatory institutions are vital elements in societal governance and change.

Importantly, however, and unlike scholarship in the environmental humanities, the RESCUE report also highlights the importance of taking a strategic approach to the development of structured and properly resourced systems of interdisciplinary and transdisciplinary working, as well as more conventional disciplinary research.[136] For example, it stresses that research projects should not start off internally within a discipline, but that the sciences, humanities and social sciences 'should be integrated from

132. They take standard-setting in the EU water framework directive, the EU chemicals regulation GMOs and synthetic biology as examples: see McEldowney and McEldowney, above n 1, at 172–190.
133. Ibid, at 196.
134. Ibid, at 197–198.
135. RESCUE report, above n 85, p 28.
136. Ibid, pp 27–28. See also Holm et al, above n 106.

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day one'.[137] The RESCUE model, known as a Radically Inter- and Transdisciplinary Environment ('RITE') requires that no one discipline has supremacy in developing a programme of research. Rather, disciplines other than natural science must be able to identify priorities that are relevant to fundamental research issues within their own areas: this is because the complex challenges posed by environmental change, its causes and its implications, 'are best addressed via dialogue cross-reference systems'.[138] The RESCUE vision therefore recognises that new institutional structures and research methods must be developed in order to 'weave' the insights derived from the humanities and social sciences into a foundation for action.[139] In the context of research methods, this means, among other things, developing new models and ways of thinking in order to capture the complexity of the human and social aspects of environmental change and the related insights of the humanities and social sciences.[140]

(c) Looking to the future: developing new contexts for legal research methods

These are all exciting intellectual avenues for environmental law scholars to explore. But thinking about issues of the sort outlined above brings a fundamental methodological issue to the fore. As already suggested, given that most environmental law and related regulatory processes are created and dominated by the sometimes competing agendas of policy makers, scientists and regulators, much environmental law scholarship has hitherto been reactive to the actions of others. Working in this context, it has therefore been difficult for environmental law scholars to do more than review and critique old ground, which perhaps limits interdisciplinary interest in legal research, and in working with legal academics.

Environmental science does not, by contrast, have the same intrinsic wariness of assessing future events and has developed sophisticated techniques for modelling them: indeed, anticipating the future is a key aspect of it. Fisher, Pascual and Wagner have argued that it is therefore essential for environmental law scholars to develop a high level of familiarity with and understanding of environmental models, as they have an important role in delineating and governing the ambit of regulatory decision taking.[141] There are, of course, different types of models, but environmental models tend to be highly quantitative and technical.[142] To create qualitative models also requires a high level of quantitative and computer programming expertise.[143] Most environmental law scholars, however, do not possess the skills set to construct their own models.

But there are still ways in which environmental law scholarship can, it is argued, break out of the intellectual straitjacket of retrospection. Drawing on the RESCUE report's vision of developing new methods in order to build the insights derived from the humanities and social sciences into a foundation for action,[144] one approach that could have considerable potential is the development of qualitative 'legal scenarios', drawing

137. RESCUE report, above n 85, p 28.
138. Ibid. See also Holm et al, above n 106, at 29–30.
139. RESCUE report, above n 85, p 29.
140. Ibid.
141. E Fisher, P Pascual and W Wagner 'Understanding environmental models in their legal and regulatory context' (2010) 22(2) J Envtl L 251.
142. US Environmental Protection Agency *Guidance on the Development, Evaluation, and Application of Environmental Models* (Washington, DC: US EPA, 2009) chs 3–4.
143. For discussion of the key issues in qualitative (as opposed to quantitative) modelling, see BJ Kuipers 'Reasoning with qualitative models' (1993) 59 Artificial Intelligence 125.
144. RESCUE report, above n 85, p 29.

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on the already significant literature on using scenarios in environmental assessment.[145] Legal scenarios would have the objective of exploring the implications of legal and governance issues in ways that are relevant to scientific experts, policy makers and regulators.

Clearly, this paper can do no more than sketch how legal scenarios could be developed and utilised, and there are a number of different approaches that could be taken. The opportunities presented by legal scenarios for both classic and novel environmental law scholarship can, however, be outlined. They have the potential to bring together information and evaluate the implications of legal regimes and regulatory systems in the context of imaginable environmental developments, and at the same time to involve, and be of relevance to, scientists and policy makers. They could raise awareness and understanding of the complexity of the human and social connections inherent in governing and responding to environmental change through legal and regulatory structures.

The basic idea of the environmental scenario method is that scenarios are invented stories of the future that facilitate the development of new understandings of the implications of change, based on 'if–then' propositions.[146] Environmental scenarios typically 'build' scenarios, or a series of unfolding scenarios, which are then analysed to evaluate ways in which to respond to different situations.[147] There is a range of different possible methods, and scenario studies can be subdivided into qualitative or quantitative, exploratory or anticipatory, and 'baseline' or policy analyses.[148] Scenarios can also take place over varying timescales and be of different levels of spatial scale (ie from local to global).[149] There is considerable variation between and within environmental scenario studies and potential for further development of scenarios as a method. Importantly, the development and analysis of scenarios typically involves participants from a range of different disciplines, as well as stakeholders who are involved directly in the area that is the subject of the scenario.[150] In this context, scenarios can act as a 'bridge' between environmental science, policy and other disciplines such as law, the humanities and social science. They can bring together different forms of knowledge in ways that make complex issues understandable and relevant across disciplinary boundaries, which can assist in the development of new approaches to particular problems.[151]

Building on this, there are a number of ways in which legal scenarios could be constructed. It is likely, given the expertise and skills of environmental law scholars, that they would be drawn towards qualitative scenarios, although there could be the

145. See principally J Alcamo (ed) *Environmental Futures: The Practice of Environmental Scenario Analysis* (Amsterdam: Elsevier, 2008); European Environment Agency *Scenarios as Tools for International Environmental Assessments* (Copenhagen: EEA, 2001); and J Alcamo, E Kreileman and R Leemans (eds) *Global Change Scenarios of the 21st Century* (Oxford: Pergamon/Elsevier Science, 1998). For discussion of the use of environmental scenarios in strategic planning, including in the UK, see DA Farber 'The challenge of climate change adaptation: learning from national planning efforts in Britain, China and the USA' (2011) 23 J Envtl L 359 at 366–368, 373–376. The UK government has recognised the value of environmental scenarios in planning: see DEFRA *Adapting to Climate Change in England: A Framework for Action* (London: DEFRA, 2008) p 29.

146. J Alcamo and T Henrichs '*Towards guidelines for environmental scenario analysis*', in J Alcamo (ed), ibid, p 13; and European Environment Agency, ibid, pp 7–8.

147. Alcamo and Henrichs, ibid, p 16.

148. For discussion, see ibid, pp 19–22; and European Environment Agency, above n 145, pp 10–13.

149. Alcamo and Henrichs, above n 146, pp 31–33.

150. Ibid, pp 26–29.

151. European Environment Agency, above n 145, p 9.

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potential to introduce a degree of quantitative modelling (which might be of particular benefit to scientific participants) through what is called the 'story and simulation' approach.[152] The usual format of qualitative environmental scenarios is narrative, with a 'storyline'.[153] In the legal scenario context, this could be built up using participatory approaches to bring together the views of different disciplines,[154] experts and stakeholders on how legal/regulatory systems might operate in complex environmental situations.

Legal scenarios could be exploratory or anticipatory.[155] The former would start with the current law and legal/regulatory system and explore how it might operate in the event of an environmental situation, which could be (but would not have to be) what is called a 'surprise' situation, where an event that is possible but thought unlikely occurs.[156] Anticipatory scenarios, by contrast, could take a view of the future (such as the achievement or non-achievement of a pollution target) and then work backwards to analyse how that situation had come about.[157] In this latter context, the dynamics of regulatory systems and the substance of the law could be significant factors in the analysis.

For example, events that have already occurred elsewhere, such as the Fukushima nuclear power plant emergency, could be adapted to develop an exploratory qualitative surprise scenario, to 'stress test' modern UK legal provision and regulatory structures. Scientific and technical experts, regulators and stakeholders as well as environmental law scholars could be involved in building and analysing the scenario. The sort of legal/regulatory issues that could be explored might be as follows. What UK law would apply? What would the operation of the law and regulatory process actually mean in context, and what issues could arise from its implementation? Which regulatory bodies would be responsible for the operation of the legal regime, and how effective might they and it be as the scenario develops? What legal and human rights would those affected have under UK law? What provision exists for the protection and reinstatement of the environment and wildlife, and how would those whose health, property or livelihoods have been damaged be compensated? What conclusions can be drawn that might suggest the need for a change in policy or reform of the law?

There are many approaches that could be utilised by both classic and novel environmental law scholars in this type of exercise. Some would require doctrinal analysis of the law's substance, combined with evaluation of the law and regulatory processes in their socio-political, historical and comparative contexts. Obviously, the use of qualitative and participative methods inherent in the scenario approach would develop socio-legal technique and interdisciplinary working. Radical empirical methods of this nature could provide a way of bridging the disciplinary divide by summarising and synthesising complex legal and regulatory issues in ways that involve and are relevant to scientific and technical advisers, regulators, policy makers and stakeholders. In addition to potentially facilitating policy and legal reform, they may also encourage interdisciplinarity of the sort that is championed by the environmental humanities, the RESCUE report and others, and promote deeper understanding of how law and regulation are, as

152. Alcamo and Henrichs, n 146 above, p 25–26; and European Environment Agency, ibid, pp 25–28.
153. Alcamo and Henrichs, ibid, p 22.
154. On which, see ibid, pp 26–29.
155. Ibid, p 20; and European Environment Agency, above n 145, p 11.
156. Alcamo and Henrichs, above n 146, pp 29–31.
157. Ibid, p 20; and European Environment Agency, above n 145, p 11.

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human and social phenomena, part of the process of environmental change and society's interaction with it.

Engagement with these ideas therefore has the potential to give rise to new ways of thinking about how legal methodologies can be re-contextualised to provide fresh directions for environmental law research. Resetting legal methods in this way offers environmental law scholars the opportunity to make valuable and distinctive contributions to new interdisciplinary efforts to address the environmental challenges facing society.

5. CONCLUSION

The debate initiated by Fisher et al is challenging for environmental law scholarship. Their central argument that it is still perceived by many in the field as immature is uncompromising but justified and should be faced head-on, as should their contention that addressing the issue of method is key to its future development. This paper expands on a further point made by them, which is that environmental law scholars should think more closely about what can be learnt from methodological debates in the legal mainstream and interdisciplinarity as part of the process of developing the discipline. It locates environmental law at the margins of the wider legal academy before exploring the ways in which insights derived from the environmental humanities and sciences have the potential to invigorate and mature environmental law scholarship by creating exciting new contexts for the development of interdisciplinary legal research methods.

The paper develops the idea of legal scholarship generally as an imagined 'legal space'. At its core is research in large, established subject areas that are centred on analysing legal principle in precedent and legislation and the activities of judges, courts and lawyers. Environmental law scholarship is, it is argued, located at the margins of the legal space for a number of structural reasons. First, and without denigrating its often high academic quality, what is called 'classic' environmental law scholarship is derived intellectually from core subject areas because the fundamental legal principles at issue in it often emerge from them. It is comprised of research into conventional legal issues in different environmental contexts, such as liability for environmental torts, nuisance, access to justice or the judicial review of the decisions of environmental regulators. The methods used in classic environmental law scholarship encompass both socio-legal and doctrinal approaches and are not appreciably different from those used in larger subject areas closer to the core of the legal space. For these reasons, in combination with its relative lack of scale, it can be said to be marginal within the legal space. Secondly, what is called 'novel' environmental law scholarship is also marginal. It is predominantly socio-legal in approach and seeks to analyse statutory and regulatory regimes in complex and polycentric areas such as climate change. There are comparatively few justiciable legal principles and limited involvement by courts, judges and lawyers. Often, legal scholars lack specialist expertise in the law's substance. As a result, scholarly activity in the field is centred on policy-based, theoretical or technical analyses of governance and regulatory systems. Novel environmental law scholarship therefore has relatively little connection with the core subject matter of the legal space. Moreover, notwithstanding the often high standard of this kind of research, its main intellectual wellspring is wider governance scholarship, which is itself at the edge of the legal space.

This raises major issues. For if environmental law scholarship, whether classic or novel, doctrinal or socio-legal, is at the periphery of the legal space, and is never going to be significant in terms of the core, it suggests that the future development of the

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specialism requires the creation of successful interdisciplinary links with those in neighbouring environmental 'spaces'. The difficulty with this is, of course, how to go about doing so and, in particular, in determining how legal research methods can be made relevant to science – the dominant discipline in environmental scholarship.

The approach of the environmental humanities to the use of existing methods in developing interdisciplinary connections with science provides environmental law scholars with valuable perspectives on 'resetting' legal methods in new contexts. They can learn from the approaches taken by environmental historians in developing more nuanced understandings of the holism and complexity inherent in human interaction with science and the environment. In addition, like storytelling in the humanities, legal scholarship can play an important part in interdisciplinary collaboration by providing powerful narratives that bring together complex legal, scientific, social and political issues in ways that articulate and shape understanding of the lateral, non-linear interrelationships between environmental and human problems, thereby facilitating connectivity across disciplines. Moreover, there is increasing awareness within the environmental sciences that, since human activity is a cause of much global change, it is important that the humanities, social sciences and law are involved in developing new ways of interdisciplinary working in order to facilitate the creation of a deeper understanding of society's effect on the environment. The RESCUE report therefore addresses themes similar to those of the environmental humanities, but takes a more strategic view of the key issues to be explored by interdisciplinary research and on research methods.

These arguments then raise the difficult question of how environmental law scholarship can develop ways of collaborating with science and other disciplines. As the recent content of the JEL suggests, UK environmental law scholars are usually not involved in empirical research and do not tend to work with those in other disciplines: the focus has been on document-based socio-legal/law in context/regulatory studies, or what might be called solo, 'moderate' interdisciplinarity. There is, however, surely significant potential to create exciting new forms of environmental law scholarship and 'radical' interdisciplinary collaboration through greater use of empirical methods. In the context of evaluating scientific method, John and Sharon McEldowney have argued[158] that environmental law researchers could, using interdisciplinary case-study methods in conjunction with scientists, develop a new reflexive discourse across disciplinary boundaries that, among other things, would foster understanding of how the science base operates through environmental law and regulatory structures.

Going beyond this, it is argued in this paper that the environmental scenario technique can be adapted to create exciting new forms of legal scenarios to evaluate the utility and significance of legal and regulatory provision in the wider context. Studies of this nature could draw on both classic and novel environmental law scholarship, utilise doctrinal and socio-legal methods, and, through the adoption of participatory approaches, involve and be of value to scientists, regulators, policy makers and stakeholders. Working with other disciplines in this way would not only energise thinking about the value of legal research in understanding human interaction with the environment: it would be relevant to other disciplines, contribute to wider environmental debate and galvanise the development of the range, relevance and maturity of environmental law scholarship.

158. McEldowney and McEldowney, above n 1.

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