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# BEHAVIOUR ON A BEER MAT: LAW, INTERDISCIPLINARITY & EXPERTISE

Nicky Priaulx & Martin Weinel<sup>†</sup>

## Abstract

*In this paper we seek to offer an original theoretical platform for thinking about the nature of legal knowledge produced through ‘legal interdisciplinarity.’ The context for our discussion is the emergence of a ‘behavioural boom’ in the field of law where researchers increasingly turn to fields like behavioural economics to encourage shifts in legal and social governance architecture. Using a case study which explores the application of a sub-branch of psychology to civil law, we highlight serious concerns attending the capacity of lone legal researchers to meaningfully navigate non-legal domains. Central to our analysis, is the sociology of expertise and experience, and it is from this perspective that we explore the interdisciplinary process. Drawing attention to the extent to which largely “unwritten” practices and conventions inhabit disciplines and how these govern knowledge, we point to the insurmountable barriers confronting lone legal interdisciplinarians. We illustrate why that work, by contrast with genuine collaborative/interactional interdisciplinary research, should be regarded as lacking value from a policy/political perspective. This is not, however, to diminish the potential value of works of a non-collaborative nature. Noting the value of interdisciplinary work of a more provisional and creative character, and its critical importance to the legal project, we draw a critical distinction between interactional research and simulated research. This distinction we argue proves critical to identifying what interdisciplinary work can lend itself to policy application and that which cannot, as well as accommodating the fullest range of interdisciplinary research efforts to flourish.*

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## I. INTRODUCTION

In this paper we seek to offer an original theoretical platform for thinking about the nature of legal knowledge produced through ‘legal interdisciplinarity.’ The context for our discussion is the emergence of a ‘behavioural boom’ in the field of law where researchers increasingly turn to fields like behavioural economics and allied disciplines as a means of encouraging shifts in legal and social governance architecture.<sup>1</sup> Our contribution raises serious concerns about the capacity of legal researchers to meaningfully navigate non-legal domains and the value of such work in policy-making terms.<sup>2</sup> While the considerations raised here are not restricted to legal knowledge as it emerges through the scholastic interdisciplinary paradigm this is the primary context we use to operationalize our concerns.<sup>3</sup>

We articulate our concerns through a case study which illustrates both the

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1. See Robert A. Hillman, *The Limits of Behavior Decision Theory in Legal Analysis: The Case of Liquidated Damages*, 85 CORNELL L. REV. 717, 717 (2000) (“[L]egal writers have turned with enthusiasm to other disciplines to broaden their perspective. Economic analysis of law is, of course, the predominant example of legal analysts’ turn to social science. By utilizing economic principles to explain and predict legal norms, the economic approach presents a largely unified, objective perspective on what the law is and what it should be.”); see also *id.* at 718 (“[L]egal scholars are turning enthusiastically to another social science that enriches the analysis of human decision making, called behavioral decision theory (BDT). This discipline seeks to explain and predict people’s decisions and to account for their propensity when making decisions to depart from the predictions of the wealth-maximization principle.”).

2. See Hillman, *supra* note 1, at 718 (“[I]n employing BDT, legal writers face the following dilemma: As a whole, BDT explains that human behaviour is complex and contradictory. Taken this broadly, BDT is not likely to contribute very successfully to instrumental legal reform, which, of course, requires understanding the probable effect of law on human behaviour. Alternatively, if legal theorists focus too narrowly on particular behavioural observations, their analysis will be no more realistic than predictions based on economic analysis’s wealth-maximization precept.”).

3. The concerns we raise in respect of legal knowledge have application to legal practice and the everyday stuff of law (e.g., in the courtroom, articulated by judges, by cross-examining barristers, through client interviews, legal evaluation of medical reports in the preparation of a case). Law is inherently inter-institutional and inter-disciplinary, for as Samuel notes, “to say anything sensible about rules”, entails drawing upon alternative “schemes, methods, paradigms, propositions, categories, and concepts from outside law.” Geoffrey Samuel, *English Private Law: Old and New Thinking in the Taxonomy Debate*, 24 OXFORD J. LEGAL STUD. 335, 343 (2004).

promise and perils of legal interdisciplinarity by focusing upon the work of two American researchers, Samuel Bagenstos and Margo Schlanger, who engage psychological theory to encourage significant shifts in the civil law of damages.<sup>4</sup> While the work is indicative of a strong and growing trend towards using insights from the behavioural sciences to inform social and legal governance architecture, the so-called “behavioural turn” in legal studies,<sup>5</sup> it delivers a striking example of the kinds of problems which legal scholars, enthused with new perspectives, can run into.<sup>6</sup> Illustrating serious concerns around the authors’ interpretation of a sub-branch of psychology and strong claims as to the justificatory force it provides for legal policy reform, we note that such practices are far from one-offs in the legal enterprise.

Yet, notwithstanding the problems we highlight, there is still great value to be found in the interdisciplinary endeavour. As one mode of intellectual cross-fertilization, “interdisciplinarity” traditionally expresses the attempt to create some kind of dialogue, typically occurring in a university environment, between different disciplines.<sup>7</sup> Yet despite its championed status interdisciplinarity nevertheless constitutes a highly ambiguous term.<sup>8</sup> Applied loosely in practice, “to describe – and justify – a very wide range of academic inquiry” as Moran notes, “interdisciplinarity has a tendency to be all things to all people.”<sup>9</sup> Given the impossibility of defining how precisely one should interact with other knowledge domains, coupled with the relative novelty of interdisciplinarity,<sup>10</sup> cross-disciplinary collaboration<sup>11</sup> and research methods training for legal academics,<sup>12</sup> it is unsurprising that resulting interdisciplinary

4. See Samuel R. Bagenstos & Margo Schlanger, *Hedonic Damages, Hedonic Adaptation, and Disability*, 60 VAND. L. REV. 745, 751 (2007) (arguing that hedonic damages should not be awarded based on disability because “people with disabilities tend not to believe that their disabilities limit the ability to enjoy life” even though “people without disabilities have a much more pessimistic view.”).

5. Sabine Frerichs, *False Promises? A Sociological Critique of the Behavioural Turn in Law and Economics*, 34 J. CONSUMER POL’Y 289, 289 (2011) (“While there has been an increasing emphasis on economic perspectives at the expense of sociological perspectives within the field of law, economy, and society, a major shift can now also be observed in the field of law and economics. With the behavioural turn in law and economics, *homo economicus* seems to be transformed into *Homer Economicus* . . .”).

6. See Hillman *supra* note 1, at 718 (explaining that if legal theorists focus narrowly on behavioural observations, “their analysis will be no more realistic than predictions based on economic analysis’s wealth-maximization precept.”).

7. See ALLEN F. REPKO, *INTERDISCIPLINARY RESEARCH - PROCESS AND THEORY* 3–4 (2d ed. 2012), available at [http://www.sagepub.com/upm-data/43242\\_1.pdf](http://www.sagepub.com/upm-data/43242_1.pdf) (“Generalist interdisciplinarians understand interdisciplinarity loosely to mean ‘any form of dialog or interaction between two or more disciplines’ while minimizing, obscuring, or rejecting altogether the role of integration . . . . Integrationist interdisciplinarians . . . believe that integration should be the goal of interdisciplinary work because integration addresses the challenge of complexity.”)

8. JOE MORAN, *INTERDISCIPLINARITY* 1–2 (2d ed. 2010).

9. Douglas W. Vick, *Interdisciplinarity and the Discipline of Law*, 31 J. L. SOC’Y 163, 164 (2004).

10. See Wendy Schrama, *How to Carry Out Interdisciplinary Legal Research: Some Experiences with an Interdisciplinary Research Method*, 7 UTRECHT L. REV. 147, 160 (2011) (noting that the paper partly “concerns the integration of the non-legal data, which show a significant divergence between the legal and the real reality, into the legal domain”); see also *id.* at 161 (stating that “there is a real challenge in building bridges between the legal discipline and other sciences.”).

11. Michael Heise, *The Importance of Being Empirical*, 26 PEPP. L. REV. 807, 817 (1999) (“Law professors could collaborate with other scholars who possess experience and expertise in empirical research. Collaboration is a well-established norm in most academic disciplines, especially in the social and hard sciences.”).

12. Paddy Hillyard, *Invoking Indignation: Reflections on Future Directions of Socio-legal Studies*, 29 J.

works demonstrate a vast range of approaches, varying degrees of methodological quality, and broad variations in the extent to which legal scholars exhibit understanding of the theories and concepts they work with.<sup>13</sup> While this presents problems in adjudging the value and quality of the resulting works, the imposition of tougher guidelines to ensure quality assurance correspondingly risks killing off the kind of creative and exploratory mindset which is both desirable and critically important to the development of any field, including law.<sup>14</sup> How to promote the broadest freedom in legal interdisciplinarity whilst providing the tools for assessing the value of those efforts constitutes our current problem domain. As such, while the temptation to ‘discipline’ interdisciplinary efforts in law might well be strong, we advance an alternative approach.

In our view, a stronger appreciation and reflexivity on the part of researchers around the question of *what counts as knowledge* is likely to be more critical in the long run for informing good interdisciplinary practice, and indeed, robust socio-legal research. As such, we outline a framework which we believe proves critical for enhancing and broadening legal researchers’ appreciation of the nature of knowledge and the social processes critical for its formation and recognition. The theoretical platform for that framework is the sociology of expertise and experience,<sup>15</sup> and it is from this perspective that we explore the interdisciplinary process of crossing disciplinary boundaries into alternative bodies of knowledge, which in the absence of commanding dual-disciplinary expertise, will constitute foreign theoretical domains. We draw attention to the extent to which largely “unwritten” practices and conventions occupy disciplines, and how these govern knowledge, ‘give meaning’ to it and operate to heavily anchor knowledge to its home domain.<sup>16</sup> This not only means that knowledge is highly domain-specific, but that it will be largely out of reach to those specialized in other domains. Intersecting with Vick’s exposition of the “traps for the unwary”<sup>17</sup> awaiting legal interdisciplinarians, our analysis suggests that this discourse underplays aspects of a problem which is far more significant in practice. Certainly, for the lone interdisciplinarian, those traps may be insurmountable.<sup>18</sup> This argument is strongly underpinned

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L. SOC’Y 645, 646 (2002) (“I wish to take a broad-brush approach and suggest that the future direction of sociolegal research should be informed by less theory and more moral indignation.”); *see also* Schrama, *supra* note 10, at 152–53 (“[L]egal researchers have had no training in the collection of large-scale data sets, nor qualitative methods, such as interviews with respondents.”).

13. Erika Arban, *Interdisciplinary Approaches to Legal Research: Law and Economics and Critical Legal Studies from a North American Perspective*, AMMINISTRAZIONE IN CAMMINO 1 (2011), available at [http://www.amministrazioneincammino.luiss.it/wp-content/uploads/2011/01/E.Arban\\_giur-cost2.pdf](http://www.amministrazioneincammino.luiss.it/wp-content/uploads/2011/01/E.Arban_giur-cost2.pdf) (noting interdisciplinary legal approaches such as law and economics and critical legal studies.).

14. *See* Schrama, *supra* note 10, at 151 (noting that the type of interdisciplinary research determines the methodological requirements, as well as pitfalls in general regarding interdisciplinary research: unilateral and multilateral).

15. HARRY COLLINS & ROBERT EVANS, *RETHINKING EXPERTISE* (2007).

16. *See generally* WRITING FOR SCHOLARLY PUBLICATION: BEHIND THE SCENES IN LANGUAGE EDUCATION 234 (Christine Pears Casanave & Stephanie Vandrick, eds., 2003) (explaining how one learns unwritten rules by engaging in their disciplinary community).

17. Vick, *supra* note 9, at 185.

18. *See generally id.* (stating that a legal scholar will inevitably make one of a number of possible errors).

by the “normative theory of expertises” as it has been developed by Collins and Evans in the field of science and technology studies.<sup>19</sup> Collins and Evans provide one of the most comprehensive engagements with expertise by constructing a substantive and multi-dimensional theory that links expertise to the acquisition of “[t]acit knowledge”—“knowledge that is not explicated,”<sup>20</sup> which plays a crucial role in all meaningful human activities, whether gaining a “deep understanding” and mastering of specialist skills in domains such as high energy physics or medicine, or even ubiquitous skills such as speaking one’s native language or riding a bicycle in traffic.<sup>21</sup> Insofar as tacit knowledge, which proves critical to making sense of explicit knowledge, can only be acquired through social immersion in the expert domain in question, this points to significant impediments to interdisciplinary research.<sup>22</sup>

Despite this, the application of the theory of expertises to legal interdisciplinarity supports a far more positive analysis, which we develop here. It provides an epistemic framework and practical guide for assessing the widest variety of works under the interdisciplinary umbrella.<sup>23</sup> In particular, we distinguish between two kinds of interdisciplinary research: *simulation (“crash test”) research*, which embraces the kind of creative mindset necessary for the discovery and elimination of new questions,<sup>24</sup> research angles and modeling hypotheses,<sup>25</sup> and *interactional research*, in which researchers exploring foreign bodies of knowledge collaborate or interact directly with specialists from the target domain.<sup>26</sup> Insofar as these two kinds of interdisciplinary approaches are valuable for the development of legal knowledge, the kind of weight we can place upon them must differ. This proves critical to establishing the policy value of research, given that interdisciplinary works are seen as increasingly relevant to social governance architecture in the political sphere.<sup>27</sup> In addressing this latter issue, while work which arises as a result of “deep understanding” holds strong value in policy terms, we nevertheless argue that interdisciplinary approaches falling short of this standard remain valuable. It is from highly experimental, haphazard and

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19. COLLINS & EVANS, *supra* note 15; see also Harry Collins & Robert Evans, *The Third Wave of Science Studies: Studies of Expertise and Experience*, 32 SOC. STUD. SCI. 235, 235 (2002) (explaining the need for a normative theory of expertise to establish grounds for limiting technical decision making rights).

20. HARRY COLLINS, TACIT AND EXPLICIT KNOWLEDGE 1 (2010).

21. *Id.*

22. See Alan Frost, *The Different Types of Knowledge*, KMT (2013), <http://knowledge-management-tools.net/different-types-of-knowledge.html> (explaining how tacit knowledge differs from explicit knowledge).

23. COLLINS & EVANS, *supra* note 15.

24. C.R. KOTHARI & GARG GAURAV, RESEARCH METHODOLOGY: METHODS AND TECHNIQUES 4 (3d ed. 2014).

25. *Id.*

26. See EUROPEAN COMM’N, IMPROVING KNOWLEDGE TRANSFER BETWEEN RESEARCH INSTITUTIONS AND INDUSTRY ACROSS EUROPE 7–16 (2007), available at <http://ec.europa.eu/research/era/docs/en/knowledge-sharing-european-commission-182-2007-en-pub.pdf> (describing the benefit of knowledge transfer between research institutions and industry for Europe).

27. See Susan Owens & Louise Drifill, *How to Change Attitudes and Behaviours in the Context of Energy*, 36 ENERGY POL’Y 4412, 4415 (2008) (discussing how interdisciplinary work might help develop more productive and genuine dialogue between disciplines to make a substantial contribution to policy formulation and implementation).

even mistaken engagements that strikingly important hypotheses can arise.<sup>28</sup> As such, the aim here is to provide a theoretical platform which allows a critical demarcation to be drawn between simulated and interactional research in order to accommodate the fullest range of interdisciplinary research efforts to flourish.<sup>29</sup>

## II. THE BEHAVIOURAL TURN

In the context of a voluminous socio-legal critique which has long lamented law's resistance to external knowledge, both as a functioning field of practice<sup>30</sup> and as an academic enterprise,<sup>31</sup> the emergence of what has been coined the "behavioural turn" in legal studies should undoubtedly be welcomed.<sup>32</sup> Arguably, that "turn" may be indicative of a "flash point" or critical confluence of earlier works which created the case for the transformation of a field where, according to Samuel, to resolve modern day issues, one could still appeal to Roman law knowledge.<sup>33</sup> Law's epistemic foundations and efficacy have not merely constituted enduring subjects for analysis, but central preoccupations for socio-legal, critical legal theory and feminist scholarship.<sup>34</sup>

Within these traditions scholars have long drawn upon a broad range of techniques and disciplinary knowledge by which to demonstrate how law is predicated upon false images of humanity by virtue of a fatal disconnect from "social reality."<sup>35</sup> Emphasizing how "real people" and "real institutions" frequently deviate from legal characterizations, socio-legal theorists powerfully illustrate how so much of legal knowledge is founded upon unsubstantiated claims,<sup>36</sup> where judicial narratives constitute "proxies for the

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28. See generally ROYSTON M. ROBERTS, *SERENDIPITY: ACCIDENTAL DISCOVERIES IN SCIENCE* (1989) (explaining that many scientific discoveries such as Teflon, Velcro, nylon, x-rays, and penicillin actually came about by accident).

29. We focus here upon introducing to a legal audience a range of novel theoretical and practical considerations which arise from the theory of expertise as they apply to legal interdisciplinarity. For the greater part we treat (legal) interdisciplinarity as both a contemporary and desirable practice, rather than as a historical artifact or an activity that demands justification. See generally Paul J. Stancil, *The Legal Academy as Dinner Party: A (Short) Manifesto on The Necessity of Inter-Interdisciplinary Legal Scholarship*, 2011 U. ILL. L. REV. 1577, 1577–91 (exploring the need for an increase in interdisciplinary legal scholarship); Roger Cotterrell, *Subverting Orthodoxy, Making Law Central: A View of Sociolegal Studies*, 29 J.L. SOC'Y 632, 632–44 (2002) (examining alternative directions for sociolegal studies in Britain outside of theory). But see Vick, *supra* note 9, at 164 (explaining the looseness of the term "interdisciplinarity" and establishing a minimum concrete definition).

30. See generally John Flood, *Socio-Legal Ethnography*, in *THEORY AND METHOD IN SOCIO-LEGAL RESEARCH* 34 (Reza Banakar & Max Travers, eds., 2005) (addressing the relationship between ethnography and the practice of law); see also Joanne Conaghan, *Reassessing the Feminist Theoretical Project*, 27 J.L. SOC'Y 351, 351 (2000) (addressing the relationship between gender and the law); Samuel, *supra* note 3, at 342 (discussing the value of the law as an intellectual discipline).

31. See generally BRIAN Z. TAMANAHA, *A GENERAL JURISPRUDENCE OF LAW AND SOCIETY* (Oxford Univ. Press 2001) (discussing academic enterprises and the law); Vick, *supra* note 9 (explaining the effects of interdisciplinary research on the practice of law).

32. Frerichs, *supra* note 5, at 292.

33. Geoffrey Samuel, *Is Legal Knowledge Cumulative?*, 32 LEGAL STUD. 448, 474 (2012).

34. DONALD BLACK, *SOCIOLOGICAL JUSTICE* 105–06 (1989).

35. See generally *id.* (explaining the disconnect between the law and social reality).

36. Tracey Meares, *Three Objections to the Use of Empiricism in Criminal Law and Procedure - And*

real world”,<sup>37</sup> promote a form of professional reasoning which inhabits a world of “virtual fact,”<sup>38</sup> or constitutive of a form of political rhetoric, a “confidence trick” designed to “induce public confidence in a system that is not, after all, founded upon any actual social science principles.”<sup>39</sup> As such, the conception of a “behavioural turn” while seemingly novel, has deep roots – it is significant for building upon rather than constituting part of a lengthy struggle against legal conservatism in articulating the claim that legal knowledge sits upon shaky epistemic foundations.<sup>40</sup> Instead, that claim has transformed into the critical backdrop for a new mode of inquiry where concepts of “legal efficacy,” “socio-legal gaps” and “virtual fact” are not merely interesting socio-legal artifacts to play with at the margins of legal thought, but objects of inquiry which go to the heart of law’s authority in practice.<sup>41</sup> Insofar as law’s regulatory authority stands upon its capacity to govern human actors, the perpetuation of a paradigm orientation within law that continues to stand apart from the natural and human sciences, where research and reasoning is motivated by a “spirit of inquiry and validation,”<sup>42</sup> is one that undermines the project of law itself.

The “turn” towards the behavioural sciences should be seen as potentially significant for giving broad and respectable voice to claims that were once seen as radical, explicitly political and marginal.<sup>43</sup> As such, it appears to come with a new energy and sense of momentum.<sup>44</sup> No doubt part of the reason for this is an increasing “popular” science consciousness amongst legal academics and policy-makers.<sup>45</sup> Popular “science” bestsellers such as *Nudge*<sup>46</sup> and *Freakonomics*<sup>47</sup> have proved highly successful in capturing a critical mass, not only appealing to a wide audience of consumers, ranging from members of the public, to policy-makers and lawyers,<sup>48</sup> but capturing the political imagination.<sup>49</sup> As such, fresh attempts to interrogate existing legal architecture and “legal knowledge” through behavioural insights may seem that much more appealing for lawyers. Insofar as disciplines including law have traditionally

*Three Answers*, 2002 U. ILL. L. REV. 851, 858–59.

37. Flood, *supra* note 30, at 34.

38. Geoffrey Samuel, *Can Legal Reasoning be Demystified?*, 29 LEGAL STUD. 181, 210 n.186 (2009).

39. Samuel, *supra* note 33, at 452.

40. See Jaakko Husa, *Turning the Curriculum Upside Down: Comparative Law As an Educational Tool for Constructing the Pluralistic Legal Mind*, 10 GER. L.J. 913, 914 (2009) (explaining the importance of the behavioural turn); Samuel, *supra* note 39, at 204 (discussing the intellectual paradigms that give validity to theoretical legal models of thought).

41. Samuel, *supra* note 38, at 204.

42. *Id.* at 204.

43. Frerichs, *supra* note 5, at 290.

44. See Jeremy A. Blumenthal, *Law and Social Science in the Twenty-First Century*, 12 S. CAL. INTERDISC. L.J. 1, 16 (2002) (detailing the progression stemming from using a behavioural sciences approach); Frerichs, *supra* note 5, at 290 (explaining the importance of viewing lawyers as “consumers of economic wisdom.”).

45. Frerichs, *supra* note 5, at 290.

46. RICHARD H. THALER & CASS R. SUNSTEIN, *NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH AND HAPPINESS* (Michael O’Malley et al. eds., 2008).

47. STEVEN D. LEVITT AND STEPHEN J. DUBNER, *FREAKONOMICS: A ROGUE ECONOMIST EXPLORES THE HIDDEN SIDE OF EVERYTHING* (2005).

48. Frerichs, *supra* note 5, at 289.

49. See *id.* at 290 (discussing how Nudge offers “recommendations for public policy and law . . .”).



sought to profit from the prestige of science, and “the intellectual and cultural authority of these fields,”<sup>50</sup> the popular science movement achieves something new—it makes “hard science” seemingly intelligible and accessible to all.<sup>51</sup> Moreover in the case of works like *Nudge*,<sup>52</sup> which explicitly link behavioural theory to problem domains of legal and regulatory import, the case for regarding behavioural science as an important and critical resource for law becomes more evident, credible, and legitimate.<sup>53</sup> When one adds to the mix the promises from some quarters of behavioural science that such knowledge offers policy-makers a means of influencing human behaviour without the need for regulation, in a way that could yield “huge effects on outcomes, from increasing savings to improving health care to providing organs for life saving transplant operations . . .,”<sup>54</sup> despite some arguing that those claims are inflated,<sup>55</sup> the opportunity to gain a better understanding of human behaviour, is one that legal theorists and policy-makers alike would seem highly imprudent to ignore. The potential for empirically-based insights to “contribute to an increased effectiveness of the legal system”<sup>56</sup> seems so obvious in light of the many mysteries of law’s operation in society. Questions concerning law’s efficacy, whether legal solutions achieve their goals in society or have the “expected effect on people’s behaviour,” and whether the presumptions about the real world that undergird legal provisions and judicial pronouncements are realistic,<sup>57</sup> are all fundamentally questions about *human nature*. As such, there are good reasons for welcoming legal scholarship which illustrates a stronger appetite for making incursions into the behavioural sciences.

While not doubting the potential for the behavioural sciences to help illuminate possible routes for achieving more effective legal and social governance architecture, amongst the positive and negative commentaries around popular works such as *Nudge*, remarkably little critique reflects upon what we regard as a core concern: the legal translation of ‘insights’ from the behavioural sciences and other bodies of knowledge. Insofar as Samuel has long lamented that lawyers have been able to “construct theory models without having to concern themselves too much with external reality,” a paradigm orientation “that might be described as one of authority rather than inquiry,”

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50. STEPHEN H. KELLERT, *BORROWED KNOWLEDGE: CHAOS THEORY AND THE CHALLENGE OF LEARNING ACROSS DISCIPLINES* 71 (2008).

51. See Karen Yeung, *Nudge as Fudge*, 75 MOD. L. REV. 122, 129 (2012) (“*Nudge* is an example of the ‘new’ law and economics, albeit presented in a popularly accessible form rather than written primarily for an academic audience.”).

52. THALER & SUNSTEIN, *supra* note 46.

53. See Frerichs, *supra* note 5, at 291 (explaining the acceptance of behavioural science as ancillary to the law).

54. THALER & SUNSTEIN, *supra* note 46, at 8.

55. SCIENCE AND TECHNOLOGY SELECT COMMITTEE, *BEHAVIOUR CHANGE, 2010–12*, H.L. 179, ¶ 26–31 (U.K.); Evan Selinger & Kyle P. Whyte, *Nudging Cannot Solve Complex Policy Problems*, 1 EUR. J. RISK REG. 26, 30 (2012); Yeung, *supra* note 51, at 147.

56. Schrama, *supra* note 10, at 162.

57. *Id.* at 148; see also Geoffrey Samuel, *Interdisciplinarity and the Authority Paradigm: Should Law Be Taken Seriously by Scientists and Social Scientists?*, 36 J.L. SOC’Y 431, 450 (2009) (discussing the functionality of judicial pronouncements).

here we illustrate the kind of fundamental barriers that stand in the way of law and legal scholars making a shift towards an approach motivated by “a spirit of inquiry and . . . validation” where assertions are “supported by evidence and be, at least in principle, testable.”<sup>58</sup>

#### A. *Law Meets the Science of Happiness*

Undoubtedly central to the success of popular science works, like *Nudge*, is the care taken to make “science” accessible and in one sense “understandable.” Yet hidden between the lines of *Nudge* sits a staggering body of scientific work which the authors have gone to some effort to synthesise and critically, *translate* to make it both presentable and accessible. The expertise of *Nudge*’s authors, and team of research assistants, coupled with their conscious effort to make it appeal to the broadest audience, means that a good deal of the “science” behind *Nudge* can and must fade out of view. Behind the scenes will sit a long and arduous process of rooting out what science to include or not. In this latter regard, the *Nudge* team inevitably will have filtered out those scientific papers viewed as unreliable, being based upon an inappropriate research design, for yielding inconsistent results, for having insufficient controls, being contradicted by later research,<sup>59</sup> for being retracted, or even exposed as fraudulent.<sup>60</sup> A broad range of considerations need to attend a systematic review of the literature in determining the validity, results and relevance of that research before using it – a process Greenhalgh calls, “the science of ‘trashing’ papers.”<sup>61</sup> Which is part of science itself (and that’s before Thaler and Sunstein get to the job of selecting those studies that seem in their view, germane to their central hypothesis). Not all science is equal and not all science is good science. As such, works of the *Nudge* variety can elegantly mask not only what is a bewilderingly large research effort, but also the science of science.

The science of science refers to the processes of evaluating what constitutes reliable knowledge or not.<sup>62</sup> This is a critical step. It is an understanding of science that is generalizable and reaches well beyond particular “scientific facts” to be able to question the foundations upon which those facts have been arrived at. Even within sub-branches of science, such as

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58. Samuel, *supra* note 38, at 203–06.

59. See John P. A. Ioannidis, *Contradicted and Initially Stronger Effects in Highly Cited Clinical Research*, 204 J. AM. MED. ASS’N 218, 223 (2005) (“16% of the top-cited clinical research articles on postulated effective medical interventions that have been published within the last 15 years have been contradicted by subsequent clinical studies and another 16% have been found to have initially stronger effects than subsequent research.”).

60. See RETRACTION WATCH, <http://www.retractionwatch.com> (last visited Oct. 6, 2014) (highlighting examples of published research which has been retracted for a range of reasons, including discovery of faked data, or the subsequent discovery of a problem with research design or equipment which affects overall conclusions).

61. Trisha Greenhalgh, *How to Read a Paper: Getting Your Bearings (Deciding What the Paper Is About)*, 315 BRIT. MED. J. 243, 243 (1997).

62. See OFFICE OF SCI. & TECH. POLICY, THE SCIENCE OF SCIENCE POLICY: A FEDERAL RESEARCH ROADMAP 1 (2008) available at [http://www.whitehouse.gov/files/documents/ostp/NSTC%20Reports/39924\\_PDF%20Proof.pdf](http://www.whitehouse.gov/files/documents/ostp/NSTC%20Reports/39924_PDF%20Proof.pdf) (describing the science of science policy).

medicine and the health sciences, researchers working within those fields are cautioned that the literature is akin to a jungle, “fast growing, full of dead wood, sprinkled with hidden treasure and infested with spiders and snakes.”<sup>63</sup> Yet while experts in those fields will have techniques for helping to identify the difference between a snake and a treasure, for others, particularly those not possessed of the ‘science of science’ perspective, science can look deceptively like a walk in the park. Increasingly, much of scientific work is reported in seemingly intelligible language with standardized structures so that they appear fairly readable. However, in situations where a scientific paper may correspond with aspects of our everyday lives, or indeed core concepts and ideas appear to also form the subject of investigation in alternative academic disciplines, science papers may not only seem readable, but *comprehensible*.

In this latter respect, ‘happiness’ is something that all but the chronically sad will have insight and experience in, even if few of us are in the business of scientifically testing it. For decades psychologists in the field of hedonic psychology have been thinking about the puzzles around how happiness is fostered, lost and regained.<sup>64</sup> To lawyers, hedonic psychology might be best labelled ‘happiness studies’ insofar as the dominant measure used in the theory of ‘hedonic adaption’ or more recently, ‘adaptive preferences’, is happiness. In the original 1970s theory, Brickman and Campbell proposed that while people react to good and bad events, in a short time they return to a position of neutrality.<sup>65</sup> The authors found that because people are goal-seeking in nature and constantly strive to be happy, happiness and unhappiness merely constituted temporary and short-lived reactions to such events.<sup>66</sup> In what became a classic piece of research in the field, Brickman and his colleagues sought to provide empirical backing to the theory and from this concluded that lottery winners were not happier than non-winners, and that people with paraplegia were not substantially less happy than those who can walk.<sup>67</sup> As Diener *et al* comment, the appeal of the study lay in it not only offering an explanation “for the observation that people appear to be relatively stable in happiness despite changes in fortune” but also in explaining why “people with substantial resources are sometimes no happier than those with few resources and that people with severe problems are sometimes quite happy.”<sup>68</sup>

The theory has massive appeal at the intuitive level. If we think of our lives to date, and consider all the good and bad events that have occurred, our joy at getting a new job, our heartache at the loss of a loved one, we’ll quickly be able to assess that the impact of emotions that we felt at that time, wears off. For many of us, we do indeed get used to things, and they soon become the

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63. Peter P. Morgan, *The Literature Jungle*, 134 CAN. MED. ASS’N J. 98, 98 (1986).

64. See generally DANIEL KAHNEMAN & ED DIENER, *WELL-BEING: FOUNDATIONS OF HEDONIC PSYCHOLOGY* (2013).

65. PHILIP BRICKMAN & DONALD CAMPBELL, *Hedonic Relativism and Planning the Good Society*, in *ADAPTATION LEVEL THEORY: A SYMPOSIUM* 287 (M.H. Apley ed., 1971).

66. Nicky Priaulx, *Endgame: On Negligence and Reparation for Harm*, in *FEMINIST PERSPECTIVES ON TORT LAW*, 36, 47 (Janice Richardson & Erika Rackley eds., 2012).

67. Ed Diener et al., *Beyond the Hedonic Treadmill: Revising the Adaptation Theory of Well-Being*, 61 *AM. PSYCHOL.* 305, 305 (2006).

68. *Id.* at 306.

background in the context of the new and exciting events that lie ahead. But, to what extent can this observation be useful to law? In 2007, a paper written by Samuel Bagenstos and Margo Schlanger sought to apply this theory directly to hedonic damages in the law of tort.<sup>69</sup> What they claimed was that hedonic damages in the United States should not be awarded based on disability.<sup>70</sup> This head of damages broadly corresponds with aspects of intangible damages in the UK<sup>71</sup> insofar as it compensates for the limitations on “the injured person’s ability to participate in and derive pleasure from the normal activities of daily life, or for the individual’s inability to pursue his talents, recreational interests, hobbies or avocations.”<sup>72</sup> In something of a double-pronged attack on the practice of awarding hedonic damages given an emphasis upon disability equality and insights from psychology, the authors placed strong reliance upon adaptive preference theory noting that “disability does not inherently limit enjoyment of life to the degree that these courts suggest. Rather, people who experience disabling injuries tend to adapt to their disabilities.”<sup>73</sup> Arguing that such damages and the processes of litigation might also be viewed as discriminatory, the authors claimed that the legal process serves to reinforce stigma around disability, in presenting disability “as a tragedy” and “people with disabilities as natural objects of pity.”<sup>74</sup>

The work is fascinating and initially compelling. It draws principally upon two distinct fields of knowledge, hedonic psychology as well as disability rights theory to critique and challenge aspects of legal policy. The challenge seems to be motivated by equality concerns and justified by reference to hard science. Moreover, it feeds directly into general anxieties about the extent to which legal policy, and indeed, tort law, fail to correspond to the ‘real world,’<sup>75</sup> as well as specific battles over non-pecuniary damages in the US, and the propriety of awarding them.<sup>76</sup> The argument that a significant aspect of non-pecuniary damages over-compensates victims for illusory losses hardly breaks

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69. Samuel R. Bagenstos & Margo Schlanger, *Hedonic Damages, Hedonic Adaptation, and Disability*, 60 VAND. L. REV. 745, 748 (2007).

70. *Id.* at 749.

71. It is important to note that damages only *broadly* appear to correspond with aspects of intangible damages in the UK, and in particular with lost amenity as one aspect of damages for intangible loss. See A.I. Ogus, *Damages for Lost Amenities: For A Foot, A Feeling or A Function?*, 35 MOD. L. REV. 1, 6–7 (1972). (considering whether a plaintiff is ever adequately reimbursed for the loss of amenities by the law). There is no explicit reference to ‘happiness’ in awards for pain, suffering and lost amenity (PSLA), and the motivation for such damages continues to suffer the same lack of conceptual clarity noted some decades ago. See *id.* 7–9 (suggesting different conceptual approaches that make the plaintiff’s own enjoyment or happiness derived from using an amenity an irrelevant consideration in legal decisions).

72. Bagenstos & Schlanger, *supra* note 69, at 748.

73. *Id.* at 749.

74. *Id.*

75. See generally Richard Lewis & Annette Morris, *Tort Law Culture: Image and Realty*, 39 J.L. SOC’Y 562, 575–77 (2001) (describing the shortcomings of tort law when compensating for various types of damages).

76. Rachel M. Janutis, *Struggle over Tort Reform and the Overlooked Legacy of the Progressives*, 39 AKRON L. REV. 943, 971–72 (2006); Danielle L. Sgro, *Assessing the Propriety of Non-Economic Compensatory Damages*, 42 RUTGERS L.J. 1151 (2011); see also Richard Lewis, *Increasing the Price of Pain: Damages, The Law Commission and Heil v Rankin*, 64 MOD. L. REV. 100, 107–08 (2001) (identifying concerns raised in relation to the UK setting).

new ground in torts theory;<sup>77</sup> however, what is novel, and begs to be taken more seriously by policy makers and legal academics, is the presentation of new ‘empirical evidence’ that has the weight of science standing behind it. For us, the key question is: to what extent does Bagenstos and Schlanger’s recommendation for legal reform warrant serious consideration?

An important starting point is that Bagenstos and Schlanger’s representation of adaptive preferences fails in significant ways to represent the science of adaptive preferences. Insofar as their overarching argument hangs upon the empirical claim that people do adapt to their disabilities, in the absence of sufficient evidence to back up that claim, Bagenstos and Schlanger’s recommendations for legal reform must fail (though we might find the questions their work raises nevertheless interesting), at least on the particular grounds they offer. In this respect, the body of research around hedonic adaptation/adaptive preferences is very much a ‘work-in-progress.’ Of course whilst ‘normal science’ can be typified as a work-in-progress in one important sense, given that science does not produce ultimate ‘truths’ but consists of a project committed to continual revision and refinement, there remains a need for some stable and critical core for a field of science to develop. It is this stable and critical core which hedonic adaptation or adaptive preferences lacks. Fitting Collins and Pinch’s conception of ‘Golem science,’<sup>78</sup> the disputes in this field relate not to the periphery but to the central subject-matter. Though Golem science has the “potential to become normal science, it has not yet reached closure to the satisfaction of the core-set.”<sup>79</sup> In the context of hedonic adaptation, the field is replete with contradictory results and diametrically opposed findings as to the extent of adaptation can be found elsewhere.<sup>80</sup> Richard Easterlin notes there is a demonstrable tendency in the psychological literature to overstate the extent of adaptation to life events, and that the extent of adaptation to a disabling condition may “vary depending on the personality or other characteristics of the individual affected.”<sup>81</sup> In particular, the finding, which seems to be repeated throughout the literature subsequent to Brickman *et al*’s study, is that the assumption of the hedonic treadmill theory, notably that adaption to circumstances occurs in similar ways for all individuals, is simply false. It is a theory which has failed “to come into its own in any empirical setting.”<sup>82</sup> As Diener *et al* found in their longitudinal

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77. See, e.g., Cass Sunstein, *Illusory Losses*, 37 J. LEGAL STUD. 157, 163 (2008) (noting that economists have long questioned the propriety of awarding non-pecuniary losses on the basis of a ‘willingness to pay’ to reduce the risk of injury).

78. HARRY COLLINS & TREVOR PINCH, *THE GOLEM: WHAT YOU SHOULD KNOW ABOUT SCIENCE* 1 (1993).

79. Harry Collins & Robert Evans, *The Third Wave of Science Studies: Studies of Expertise and Experience*, in *THE PHILOSOPHY OF EXPERTISE* 39, 73 (Evan Sellinger & Bob Crane eds., 2006).

80. Marcus Fuhrer et al., *Relationship of Life Satisfaction to Impairment, Disability, and Handicap Among Persons with Spinal Cord Injury Living in the Community*, 73 ARCHIVES PHYSICAL MED. AND REHAB. 552 (1992); Sharanjit Uppal, *Impact of the Timing, Type and Severity of Disability on the Subjective Well-Being of Individuals with Disabilities*, 63 SOC. SCI. & MED. 525, 532 (2006).

81. Richard A. Easterlin, *Explaining Happiness*, 100 PROC. NAT’L ACAD. SCI. U.S. 11,176, 11,177 (2003).

82. RICHARD EPSTEIN, *SKEPTICISM AND FREEDOM: A MODERN CASE FOR CLASSICAL LIBERALISM* 146 (2004).

studies, “the size and even the direction of the change in life satisfaction varied considerably across individuals.”<sup>83</sup> Moreover, one of the key psychological proponents of the “science of happiness,” Daniel Kahneman, despite initial enthusiasm for the hedonic adaptation theory has subsequently noted:

Social scientists rarely change their minds, although they often adjust their position to accommodate inconvenient facts. But it is rare for a hypothesis to be so thoroughly falsified. Merely adjusting my position would not do; although I still find the idea of an aspiration treadmill attractive, I had to give it up.<sup>84</sup>

There would seem then to be very good reasons why theorists within the field of hedonic psychology would be hesitant in making any claims as to the ubiquity of hedonic adaptation. Diener *et al* cautioned against putting adaptation theory into practice given the many questions that necessitate researchers’ attention.<sup>85</sup> Yet, in the face of there being “no clearly established theoretical consensus over whether people adapt . . . why people adapt, at what rate they adapt, when they adapt, or what increases or decreases rates of adaptation,”<sup>86</sup> Bagenstos and Schlanger (who are lawyers, not psychologists) prove to be highly selective in the studies they incorporate (those highlighting a high level of adaptation), overlook all of the serious concerns attending hedonic psychology (articulated by experts within the field), and explicitly dismiss those like Richard Epstein who argues that the field lacks “conceptual coherence and empirical grounding.”<sup>87</sup> Instead, the authors argue, “we take a different tack. We agree with the theory’s proponents that adaptive preferences exist and that they raise significant normative questions about the unreflective use of preferences as a measure of justice or a basis for policy.”<sup>88</sup>

Quite critically, insofar as the argument for the reform of the law of damages claims to be premised upon the science of adaptive preferences, a broader analysis of the field reveals that the claims are wholly unsupported.<sup>89</sup> Furthermore, this apparent tendency towards overstating the science or theory is also demonstrated through the authors’ engagement with other aspects of behavioural science,<sup>90</sup> and disability rights theory.<sup>91</sup> While some interesting

83. Diener et al., *supra* note 67, at 310.

84. Daniel Kahneman, *What Constitutes Life Satisfaction?*, in *WHAT HAVE YOU CHANGED YOUR MIND ABOUT?* 197, 199 (John Brockman, ed., 2009).

85. Diener et al., *supra* note 67, at 312.

86. Rick Swedloff & Peter H. Huang, *Tort Damages and the New Science of Happiness*, 85 *IND. L.J.* 553, 574 (2010).

87. EPSTEIN, *supra* note 82, at 146.

88. Bagenstos & Schlanger, *supra* note 69, at 747.

89. There are broader concerns relating to the application of adaptive preferences to non-pecuniary damages. Non-exhaustively, one can take issue with the extent to which the notion of “happiness” invoked in adaptive preferences is commensurable with non-pecuniary damages and indeed to the broader ramifications of the authors’ thesis. See Swedloff & Huang, *supra* note 86, 558 (cautioning against the use of happiness in regards to public policy). In this latter respect, if hedonic adaptation theory were correct, it would raise serious questions about not only “damages” but about “damage” itself. See Nicky Priaux, *Endgame: On Negligence and Reparation for Harm*, in *FEMINIST PERSPECTIVES ON TORT LAW* 36, 37 (Janice Richardson & Erika Rackley eds., 2012) (describing how behavioural science could raise doubts about negligence in an egalitarian society).

90. See Swedloff & Huang, *supra* note 86, at 557 (discussing how arguments made in the guise of science can sway debate regardless of being correct).

points do arise from their analysis, and we return to this later, from a policy-making perspective, any policy recommendation made by these authors should be ignored for lack of scientific justification. To be clear, however, we do not take issue with the overarching concerns these scholars raise about hedonic damages; on all accounts, it may be that the subjective nature of non-pecuniary losses resulting in compensation for lost happiness, pleasure, or well-being *is* problematic; it may well be that in law, as elsewhere, people's self-reporting of their happiness is so inherently unreliable and unsusceptible to measurement as to pull it outside the reparative ideal. It may be that hedonic damages are perceived as too expensive to be maintained. Moreover, it may be that in time, these theorists', despite skewing the "science," turn out to be correct – that the psychological immune system is really extremely robust, and most of us are (or become) happy most of the time. But for present purposes this is not borne out by the science. As such, the claims that Bagenstos and Schlanger make are hypotheses, not science-based justifications to support certain policies. While policy-makers may nevertheless decide to abolish hedonic damages on alternative grounds, the justification for such a policy could not be legitimately based upon the science of adaptive preferences at this time.

### B. *Lawyers and Science*

I found that jurors wanted to ask questions about scientific and medical evidence in court because lawyers hadn't asked the right questions . . . Many lawyers have also never learnt how to present forensic evidence because they have no scientific training, despite the huge rise in the use of such evidence. So people are potentially being convicted or acquitted wrongly because lawyers don't know enough about science – it's scary.<sup>92</sup>

It might be thought that the Bagenstos and Schlanger example is somewhat overdrawn so to present a particularly problematic and unrepresentative picture of legal interdisciplinarity. It is not. Even in respect of hedonics alone, as Swedloff and Huang's detailed critique of the "legal hedonist" movement reveals, the appeal of this theory and its potential for civil

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91. The authors also sought to bolster their argument by reference to a normative claim, based on the so-called "Social Model of Disability," which they claim that disability rights activists have supported "in part because it seems to capture the *true* nature of disability." Bagenstos & Schlanger, *supra* note 69, at 779. Insofar as the social model has been an important part of the disability rights movement in articulating how disability is created/constructed by society, rather than through impairment alone, the claim that it captures "the *true* nature of disability" constitutes a serious misreading of disability rights. The Social Model is a *socio-political* one and *not* a social theory. Analysis of work from the disability rights movement and disability studies across two decades illustrates deep dissatisfaction with the model. Contradicting Bagenstos and Schlanger's findings is the frequently voiced concern with how the Social Model neglects the subjective experience of impairment (alongside a concern with the ramifications of embracing these within the social model without undermining it). See COLIN BARNES ET AL., *EXPLORING DISABILITY* (1999) (explaining the literature on disability and sociology); Liz Crow, *Including All of Our Lives: Renewing the Social Model of Disability*, in *ENCOUNTERS WITH STRANGERS: FEMINISM AND DISABILITY* 206 (Jenny Morris, ed., 1996) (discussing disability from a feminist perspective); TOM SHAKESPEARE, *DISABILITY RIGHTS AND WRONGS* 2–3 (2006) (reviewing the field of disability studies).

92. Paul Lampathakis, *Lawyers Don't Get Science*, *SUNDAY TIMES* (Sept. 11, 2006, 12:00 AM), <http://www.news.com.au/national/lawyers-dont-get-science/story-e6frfkxi-111112195772>.

law has led other high profile characters, including the co-author of *Nudge*, Cass Sunstein, to make similarly inflated claims about the reach and applicability of this nascent science.<sup>93</sup> Nevertheless, the legal hedonist movement as an example of the troubled relationship between law and science is far from a one-off.

To date, the kinds of problems we have flagged have attracted little attention within mainstream legal theory. Some have, of course, intimated the potential for grave mistakes flowing from legal interdisciplinarity.<sup>94</sup> Speaking of the lack of meaningful encounters with other disciplines, Douglas Vick noted how “the vast majority of lawyers lack the training and statistical competence to deal with research methods in non-legal disciplines.”<sup>95</sup> Yet in terms of what that heralds in the context of a live and practical discipline which increasingly cannot ignore scientific issues, concerns as to the manner by which law meets science tend to be articulated from science and technology studies, or by groups possessing a special interest in how particular bodies of evidence are managed by lawyers as well as the ramifications for justice.<sup>96</sup> Promoting the importance of responsible science in the courtroom, Peter Huber provides a stunning account of how far courtroom science can fall short of this standard.<sup>97</sup> He argues that in the context of torts litigation, the search for the “truth, the whole truth and nothing but the truth has given way to reams of meaningless data, fearful speculation, and fantastic speculation.”

An impact with a car’s steering wheel causes lung cancer. Breast cancer is triggered by a fall from a streetcar, a slip in a grocery store, an exploding hot-water heater, a blow from an umbrella handle, and a bump from a can of orange juice. Cancer is aggravated, if not actually caused, by lifting a forty-pound box of cheese. Everybody knows, of course, that such stories are fiction. (. . .) How can anybody be absolutely certain about these didn’ts, doesn’ts, and don’ts? No one can. But the science that refutes these claims is about as solid as science ever is. And yet all of these bizarre and fantastic stories . . . are drawn not from the tabloids but from legal reports.<sup>98</sup>

The root of such problems, Sheila Jasanoff argues, may partly lie with the positivist view of science which is centralized within law.<sup>99</sup> It is one which “presumes that science creates pictures of the real world and that the law merely seeks to recover,”<sup>100</sup> where the role of the courts is to “defer to what

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93. Swedloff & Huang, *supra* note 86; Sunstein, *supra* note 77.

94. See Bart van Klink & Sanne Taekema, *A Dynamic Model of Interdisciplinarity: Limits and Possibilities of Interdisciplinary Research Into Law* (Tilburg Working Paper Series on Jurisprudence and Legal History, Working Paper No. 08-02, 2008), available at <http://ssrn.com/abstract=1142847> (discussing the limits and possibilities of interdisciplinary research in law).

95. Vick, *supra* note 9, at 192.

96. See PETER HUBER, GALILEO’S REVENGE: JUNK SCIENCE IN THE COURTROOM 181–82 (1993) (discussing how courtroom science is mismanaged by lawyers).

97. *Id.* at 1–2.

98. *Id.*

99. SHEILA JASANOFF, SCIENCE AND PUBLIC REASON 192 (2012).

100. *Id.*



science already knows or to mimic as far as possible the dynamics of scientific inquiry within the courtroom.”<sup>101</sup> The failure to recognize the inherent indeterminate nature of science, where “. . . scientific claims are intrinsically provisional, contingent, and subject to deconstruction under critical scrutiny”<sup>102</sup> leaves lawyers finding causal connections where “. . . most experts, at best, see only connection and try[ing] to establish responsibility for harm on the basis of data or theories that have never graced the inside of a ‘mainstream’ scientific text.”<sup>103</sup> These concerns as they are manifested more broadly in the legal arena raise serious questions as to whether lawyers, the judiciary and indeed, policy-makers are “knowledgeable” consumers of science. This parallels the concerns we highlighted in respect of Bagenstos and Schlanger, but with more immediately troubling effect. It cuts through nearly every aspect of the stuff of law, whether the use of scientific evidence in policy debates, of expert opinion in litigation, the analysis of forensic expert reports,<sup>104</sup> to virtually every aspect of science as it intersects with matters of justice, liberty and regulatory policy. Commenting specifically of the criminal justice system, Graham and McQueen note,

As forensic experts, we see phylogenetic analysis increasingly being relied on in convictions by criminal courts and . . . we fear a renewed false confidence about the reliability of phylogenetic analysis to correctly reconstruct an HIV transmission history which may lead to risks of miscarriages of justice.<sup>105</sup>

This points to various problems. The most apparent of these is an educational deficiency which becomes manifest within the legal arena. Hoffman, for example, argues that members of the legal community who rely upon these studies to formulate public policy or support litigation claims must learn to distinguish good science from bad.<sup>106</sup> Yet while lawyers need to develop a stronger appreciation of the nature of science, those working within the field of science need a stronger appreciation of the nature of law.<sup>107</sup> While

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101. *Id.*

102. Sheila Jasanoff, *What Judges Should Know about the Sociology of Science*, 32 JURIMETRICS J. 345, 356 (1992).

103. *Id.* at 345.

104. See generally Jan de Keijser & Henk Elffers, *Understanding of Forensic Expert Reports by Judges, Defense Lawyers and Forensic Professionals*, 18 PSYCHOL. CRIME AND L. 191 (2012) (noting that jurors do not understand forensic reports, due in part to a lack of training on forensic reports with prosecutors).

105. Kiernyn Graham & Courtney McQueen, *Experts Express Concerns Over Use of HIV Fingerprinting to Establish Proof of HIV Criminal Transmission*, AIDSBEACON (Feb. 15, 2011, 4:19 PM), <http://aidsbeacon.com/news/2011/02/15/experts-express-concerns-over-use-of-hiv-fingerprinting-to-establish-proof-of-hiv-aids-criminal-transmission/>.

106. See Joseph L. Hoffman, *Where's the Buck?: Juror Misperception of Sentencing Responsibility in Death Penalty Cases*, 70 IND. L.J. 1137, 1138 (1995) (discussing how jurors rely on jury instructions to alleviate the feeling of moral responsibility in death penalty cases); see also David S. Caudill, *Ethnography and the Idealized Accounts of Science in Law*, 39 SAN DIEGO L. REV. 269, 305 (2002) (discussing the idealization of science in the legal community, and the failure to include the social aspects of science in determining the reliability of expert opinions).

107. See Andrew Ligertwood & Gary Edmond, *A Just Measure of Probability*, 11 L. PROBABILITY & RISK 365, 365–66 (2012) (questioning whether the presentation of forensic science and medical evidence in the guise of likelihood ratios is suited to criminal proof and the abilities of triers of fact—whether judge or jury).

lawyers may lack the critical science literacy necessary to ask the “right” questions or distinguish good science from bad, the manner by which scientists acting as “experts” in the courtroom, present “science” is also critical. Scientists too can be criticized for “exaggerating their level of confidence, venturing into realms where they possess little experience or proffering partial accounts.”<sup>108</sup> Speaking to this problem, Mertz notes in the context of family law, that lawyers and legal professionals who increasingly turn to psychological and relevant empirical research, are effectively moving “. . . into new worlds[ ] for which a standard legal education leaves them poorly equipped.”<sup>109</sup> Conversely, social science researchers “. . . are frequently blissfully unaware of the realities of the legal universe into which their findings may be dropped.”<sup>110</sup> As a consequence, she argues in such cases that “. . . a failure to carefully reflect on the translation process itself yields misleading results, paired with a misguided sense of overconfidence in the scientific validity of those results.”<sup>111</sup>

Of course, science as it emerges within the courtroom admits of a far more foundational critique – one which goes to the heart of the legal project itself. As Jasanoff notes, there is more in operation than merely “scientific illiteracy of legal factfinders and the corruption of self-proclaimed experts who are available for hire to represent baseless scientific positions.”<sup>112</sup> There is *also* a need for a sociologically informed conception of the legal system, from the nature of the instruments and processes it uses to deconstruct “facts” to the very purpose of law and the manner by which “facts” are molded to fit the incentives the legal system creates. Highlighting “overly romanticized views of the legal process,”<sup>113</sup> Jasanoff points to the inherent logic of the adversarial process itself, and how it can create incentives to manufacture scientific controversy where there is none, privileging “skepticism over consensus.”<sup>114</sup> Science emerging within the courtroom is transformed into disputable facts where “all facts” are treated as “equally contingent in a forum where adversaries have every incentive to overstate the weakness in each other’s positions.”<sup>115</sup> This points, quite fundamentally, to a clash of worlds, rather than a stand-alone problem of literacy in the different cultures of law and science. For while Mertz argues that rather than accepting that “indeterminacy may be an inextricable part of good science,”<sup>116</sup> “judges and lawyers sometimes confuse a lack of complete certainty with a lack of validity”<sup>117</sup> which demonstrates a “systematic lack of appreciation among lawyers and

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108. Gary Edmond, *Constructing Miscarriages of Justice: Misunderstanding Scientific Evidence in High Profile Criminal Appeals*, 22 OXFORD J. LEGAL STUD. 53, 59 (2002).

109. Elizabeth Mertz, *Undervaluing Indeterminacy: Legal Translations of Social Science*, 60 DEPAUL L. REV. 397, 406 (2011).

110. *Id.*

111. *Id.*

112. Jasanoff, *supra* note 102, at 345.

113. Jasanoff, *supra* note 102, at 190.

114. *Id.* at 191.

115. Jasanoff, *supra* note 102, at 358.

116. Mertz, *supra* note 109, at 397.

117. *Id.*

legal scholars for the scientific valence and value of indeterminacy.”<sup>118</sup> She also notes the cultural differences of science and law that serve to differentially shape the way that evidence and “facts” are handled.<sup>119</sup> While scientists “can take time to stand back and come to more precise conclusions,”<sup>120</sup> they do not ignore inconvenient facts “that might upset their preconceptions.”<sup>121</sup> By contrast, it is the job of advocates “to discredit facts that might undermine their clients’ cases.”<sup>122</sup> As such, neither legal professionals “nor the people they serve are particularly interested in a long-winded, heavily hedged or deeply nuanced explanation of what is happening. They must make choices and come to decisions.”<sup>123</sup>

The intersection of law and science as it emerges within the courtroom points to a far broader problem than we attempt to tackle here, even if aspects of our analysis have some application to it. Rather, our aim here has been two-fold. Firstly, we sought to highlight how the kinds of concerns raised by Bagenstos and Schlanger’s interdisciplinary engagement with the science of hedonic adaptation is far more generalizable; law by its very nature *is* interdisciplinary and as such, legal practice is as susceptible to an epistemic analysis as legal academia. As such we sought to link this to an existent body of literature which illustrates the troubling ramifications of a process which is in essence an interdisciplinary one for ideals of justice and legal policy. Secondly, insofar as those, like Mertz and Jasanoff ably illustrate that greater ‘literacy’ in the worlds of law and science present only partial solutions for the problems they highlight (given for example, the adversarial process),<sup>124</sup> a stronger appreciation of the nature of science nevertheless seems desirable. Indeed, it may prove critical for enabling legislators, judges and lawyers to reflect upon the justice system and to gain a sense of the problem that idealized forms of science entering the courtroom mean for the ideal of justice itself.

Our primary audience, however, is the legal academic. In our view she occupies a quite different position to that of the practicing lawyer or judge. While Mertz notes that “an action-orientated framework is in many ways the backbone of legal reasoning . . . the whole point of the legal system”<sup>125</sup> and that even law professors come “to the material steeped in a legal framework that poses alternatives in unsubtle terms – yes or no, guilty or not guilty,”<sup>126</sup> we adopt a more optimistic outlook. The legal academic, as well as those working within legislative and policy circles undoubtedly have a greater opportunity to stand outside of an institutional structure which creates perverse incentives for the emergence of hyper-real science. That is not to say that there are *no* incentives to skew “science,” but that these can be minimized by raising the

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118. *Id.*

119. *Id.*

120. *Id.* at 404.

121. *Id.*

122. *Id.*

123. *Id.*

124. *See generally* Mertz, *supra* note 109 (discussing various interactions between the law and social science).

125. *Id.* at 405.

126. *Id.* at 404.

profile of work which possesses a more experimental character, even if it offers no immediate value for policy-making purposes. Key to this we argue, is an appreciation of the nature of knowledge, the social processes critical for its formation and the limits of expertise and understanding. To a very significant degree, this helps to explain why the worlds of law and science do clash, and the very significant obstacles presented to the interdisciplinary paradigm.

C. *Interdisciplinary Literacy: Sociology of Expertise and Experience*

Here we outline aspects of the theory of expertises and how this provides a critical lens for thinking about interdisciplinary research and its limits from a policy-making perspective. Earlier we argued that Bagenstos and Schlanger had misrepresented the field of hedonic adaptation, and intimated that there was some central misunderstanding around the science that underpinned this.<sup>127</sup> We now clarify our position to illustrate what that misunderstanding consisted of, and in particular, to illustrate how “lone” legal researchers like Bagenstos and Schlanger confront *insurmountable barriers* to the kind of understanding necessary for making epistemic claims where these depend upon insights from foreign domains of knowledge. This approach starkly contrasts with that adopted by Douglas Vick, who in a well-considered piece around legal interdisciplinary, warned of the kinds of problems awaiting legal scholars travelling to different fields for inspiration and insights.<sup>128</sup> Resonating with Mertz’s conception of ‘different worlds’, Vick noted,

[T]here are traps for the unwary. Most of these pitfalls relate to the difficulty of adequately understanding disciplines other than your own – or worse, thinking you understand them when you do not. . . . It is easy to misapprehend – or be completely unaware of – the nuances of other disciplines: the terms and concepts used and distinctions made in ‘foreign’ disciplines are usually encountered in a piecemeal fashion and can be confused with seemingly similar concepts and distinctions in the researcher’s home field. The assumptions underlying the theoretical precepts or research techniques of other disciplines are often so subtle that they escape the non-specialist, and misunderstanding even seemingly minor details can prove fatal to the validity of an entire research project. So can the failure to appreciate the biases and limitations of the research methods of other disciplines – and all research methods have biases and limitations. Another hazard is misinterpreting research results: academic lawyers can be prone to the danger of attributing greater credence or significance to results obtained through ‘scientific’ research methods (that is, those that involve the use of numbers).<sup>129</sup>

Conceivably, Bagenstos and Schlanger’s interdisciplinary engagement with fields such as psychology could be assessed in light of Vick’s account

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127. Bagenstos & Schlanger, *supra* note 69, at 745–96.

128. Vick, *supra* note 9, at 173.

129. *Id.* at 185.

insofar as he outlines some of the problems inherent in interdisciplinary work. And to a significant extent, it can be strongly aligned to the theoretical approach that we adopt. However, where we sharply depart from Vick's position is in respect of what may turn out to be a largely rhetorical argument (given the extent of the barriers he outlines)<sup>130</sup> to the effect that the 'wary' may in some way *avoid* these hazards, or that the obstacles outlined are ones that with effort might be *overcome*. On these issues, we take a contrary view and with quite profound consequences for legal interdisciplinary work. Our argument relies upon Collins and Evans' Theory of Expertise, which constitutes part of a project of research within the Sociology of Expertise and Experience.<sup>131</sup> It provides a comprehensive theory of the social processes by which different types of expertises are acquired. This theory explicates what is needed for real and substantive expertise and the limits of our expertise and understanding. Providing a theoretical guide to what one *cannot* understand and appreciating what one *cannot* know that underpins our thesis as to why lone interdisciplinarity endeavours hold no immediate value in political or policy-making terms.

*D. Tacit Knowledge: The Difference between Understanding and 'Deep Understanding'*

A policy-maker being presented with arguments from Bagenstos and Schlanger would undoubtedly see claims founded directly on the basis of *substantive science*.<sup>132</sup> There is no doubt that in respect of the specific scientific research that Bagenstos and Schlanger relied upon, they "understood" those scientific sources well enough to summarize and to incorporate them into the narrative of their own paper.<sup>133</sup> We argue, however, that they lack a "deep understanding" due to their failure to take into account the broader context of the scientific domain in which hedonic adaptation research is conducted.

The acquisition of "deep understanding" is central to Collins and Evans' theory of expertise.<sup>134</sup> The key driver of their concept of expertise is "tacit knowledge."<sup>135</sup> To be an expert on something means that one has acquired particular bodies of tacit knowledge—the unwritten rules, processes and conventions which are central to any domain of human activity.<sup>136</sup> By contrast with explicit knowledge, which can be expressed in formal language and shared through texts, manuals or explanation, tacit knowledge cannot be formalized.<sup>137</sup> As Nonaka et al. note, "[t]acit knowledge is deeply rooted in action, procedures, routines, commitments, ideals, values and emotions" and

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130. *Id.* at 168.

131. COLLINS & EVANS, *supra* note 15, at 2–3.

132. Bagenstos & Schlanger, *supra* note 69.

133. *Id.*

134. COLLINS & EVANS, *supra* note 15, at 6.

135. Collins & Evans, *supra* note 19, at 241.

136. *Id.* at 238.

137. Ikujiro Nonaka et al., *SECI, Ba and Leadership: A Unified Model of Dynamic Knowledge Creation*, 33 LONG RANGE PLAN. 5, 7 (2000).

describes an “analogue process that requires a kind of ‘simultaneous processing.’”<sup>138</sup> Tacit knowledge can be defined as knowledge “which has not or cannot be made explicit.”<sup>139</sup> It is the knowledge that makes the deep understanding of explicit knowledge possible.<sup>140</sup> It is the knowledge that enables us to apply explicit knowledge in new situations and under changing circumstances. It is also the knowledge that makes the acquisition and the appropriate use of explicit possible. While it cannot be directly observed, tacit knowledge manifests itself in people’s abilities. The importance afforded to tacit knowledge does not mean that explicit knowledge, notably the knowledge that can be articulated or written down, is no longer important. Rather, explicit knowledge of facts remains a significant characteristic of experts. It is, however, the presence of tacit knowledge that enables actors to ‘deeply understand’ something.<sup>141</sup>

Collins and Evans’s concept of expertise is inherently “social.”<sup>142</sup> As Collins and Evans explain, this is because bodies of tacit knowledge are “developed” and “maintained” in social groups,<sup>143</sup> which in turn means that tacit knowledge is not the property of an individual. As such, the only way for an individual to tap into these “bodies” of tacit knowledge is to actively immerse him or herself into the social group that possesses certain kinds of tacit knowledge. Thus, mastering a tacit knowledge-laden specialism to a high level of expertise, whether car-driving or gravitational wave physics, can be likened to learning a natural language. It is attained by interactive immersion in the way of life of the culture rather than by extended studies of dictionaries or grammars of their equivalents.<sup>144</sup> To acquire tacit knowledge that is specific to lawyers, for example, one has to actively immerse oneself into the legal community, which means one has to either perform legally-specific practices or one has to talk to them about things that lawyers do and experience. Reading textbooks on law is insufficient to pick up the community-specific tacit knowledge; since tacit knowledge cannot be made explicit, it gets ‘lost’ when instructions are written down or when they are audio-recorded. It will be obvious that in order to become a “legal expert,” to represent a client, to know how to prepare a case, negotiate a settlement, behave in court, engage with other lawyers, identify a “meritorious” case, anticipate likely outcomes, and so on, one needs to do more than merely read books. In this respect, to a very significant extent, law is not logic, but experience and immersion in the life of the law.

Another important implication of linking expertise to tacit knowledge is related to the distribution of expertise. Collins and Evans distinguish explicitly between “ubiquitous expertises” and “specialist expertises.”<sup>145</sup> “Ubiquitous

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138. *Id.*

139. COLLINS, *supra* note 20, at 85.

140. *Id.* at 1.

141. COLLINS & EVANS, *supra* note 15, at 6.142. *Id.* at 6–7.

142. *Id.* at 6–7.

143. *Id.*

144. *Id.* at 23.

145. *Id.* at 13–14.

expertises” are widely distributed; to master them, it is sufficient to be immersed in everyday social life.<sup>146</sup> The possibility of “ubiquitous expertise” is provided by the theory of expertise proposed by Collins and Evans,<sup>147</sup> because tacit knowledge is involved in every meaningful or intentional human practice. Whether an actor walks on a busy pavement, uses a pocket calculator, utters a sentence in natural language, makes a bed, prepares for a date – all these activities involve tacit knowledge. Some skills, such as the ability to speak English fluently in the U.K., are so widely distributed that an actor simply has to grow up in the U.K. in order to master the skill. In other words, there is no need for an actor to immerse herself deliberately into a specific subpopulation to learn English. While some expertises can be regarded as ubiquitous in certain settings, others are not. For example, it is not enough to be socialized in a Western society to possess the ability to interpret the raw data provided by a large-scale clinical trial in an acceptable way, perform a body-domination sadomasochistic practice in a way that pleases someone prepared to pay for this service, or breed sheep in a way to produce lamb meat that meets EU standards. The tacit knowledge required for this set of activities is developed and maintained by certain specialized groups within a wider society. Most people do not usually interact with members of such groups (at least not in their capacity as members of this specialist group) and are therefore unable to acquire the tacit knowledge related to those activities. This explains why certain forms of expertise are not ubiquitous. “Specialist expertises,” in contrast, are expertises that relate to specific and often very narrow domains of knowledge such as physics, carpentry, or sheep-farming.<sup>148</sup> While the tacit knowledge related to such domains can only be picked up by immersion into the community of those who possess it, this does not mean that domain-specific knowledge is entirely out of reach to outsiders. Collins and Evans distinguish five forms of specialist expertise.<sup>149</sup>

SPECIALIST EXPERTISES	UBIQUITOUS TACIT KNOWLEDGE			SPECIALIST KNOWLEDGE	
	Beer-mat Knowledge	Popular Understanding	Primary Source Knowledge	Interactional Expertise	Contributory Expertise

*Figure 1 (Extracted from the Periodic Table of Expertises)*<sup>150</sup>

The first three types, Beer Mat Knowledge,<sup>151</sup> Popular Understanding,<sup>152</sup> and Primary Source Knowledge<sup>153</sup> can be described as “levels of knowledge” rather than as expertises. This is because the tacit knowledge needed to

146. *Id.* at 16.

147. *Id.* at 13.

148. *Id.*

149. *Id.* at 14.

150. COLLINS & EVANS, *supra* note 15, at 14.

151. *Id.*

152. *Id.*

153. *Id.*

acquire those levels of knowledge is ubiquitous (widely spread). To gain, say, the level of popular understanding about cancer research, actors have to master such ubiquitous expertises such as the ability to buy a magazine or book, and to read it.

“Interactional expertise” and “contributory expertise,” in contrast, are full-blown specialist expertises that require the acquisition of domain specific tacit knowledge.<sup>154</sup> This requires the active immersion into expert communities.<sup>155</sup> Contributory expertise refers to expertise that enables an actor to perform a skilled practice within the specialist domain.<sup>156</sup> Thus, the actor is able to do things within the domain of expertise and is therefore contributing to the activities that constitute the domain. A classic example would be the ability of a goldsmith to transform a lump of gold into a ring. There are obviously grades of contributory expertise. For example, an apprentice would not be expected to produce a ring of the same quality as a master craftsman. But the point is that someone without contributory expertise could not perform the skilled practice at all.

Interactional expertise is not linked to the ability to perform a skilled practice; rather it is “expertise in the language of a specialism in the absence of expertise in its practice.”<sup>157</sup> Interactional expertise refers to the ability to talk as if one were a full-blown contributory expert without actually being able to perform a skilled practice of a specialist domain.<sup>158</sup> A good example of an interactional expert is a successful ethnographer. Ideally, an ethnographer avoids “going native,” but on return from an extended period immersed into the culture under observation, the ethnographer should be able to give an account of the culture as if it is her own.<sup>159</sup>

#### E. *The Glass Wall: Interdisciplinarity and Expertise*

Earlier we noted how works like *Nudge* aim to make aspects of science accessible to the public at large. We also noted that while works of the *Nudge* variety serve to mask a large body of scientific research, such that the science behind the science was hidden from sight, even in the context of roaming around the internet and finding scientific papers, aspects of those primary sources can appear fairly comprehensible given an increased emphasis on a standardized format, openness, and transparency. But there are limits. Through an application of the theory of expertise, we underpin how thin that level of comprehension will necessarily be in the absence of social or linguistic immersion in the expert domain itself. As such, while “science” may *appear* accessible and comprehensible, there is a “glass wall” that prevents outsiders from being able to gain the kind of “deep understanding” necessary to access

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154. *Id.*

155. *Id.* at 18.

156. *Id.* at 14.

157. *Id.* at 28.

158. *Id.*

159. Harry Collins, *Researching Spoonbending: Concepts and Practice of Participatory Fieldwork*, in *SOCIAL RESEARCHING: POLITICS, PROBLEMS, PRACTICE* 55 (Colin Bell & Helen Roberts eds., 1984).



or comprehend research undertaken within expert communities. Critically, this consists of the tacit/unwritten conventions, procedures, practices, and language in which one must become ‘fluent’ in order to have depth of understanding and expertise.

On the problem before us of lawyers drawing upon psychology, behavioural economics, or other fields in which that individual has not been immersed within the domain specific community of experts, ubiquitous social understanding is left as the only plausible basis for expertise. Without direct social contact or active immersion into an expert community, the highest level of specialist expertise an actor can reach according to the periodic table of expertises is ‘Primary Source Knowledge.’<sup>160</sup> By contrast with ‘Beer Mat Knowledge’ or ‘Popular Understanding,’ this kind of knowledge comes with reading primary or quasi-primary literature,<sup>161</sup> such as scientific papers and journal articles. By contrast with “Beer Mat Knowledge” or “Popular Understanding,” this kind of knowledge comes with reading primary or quasi-primary literature,<sup>162</sup> such as scientific papers and journal articles. Those depending solely on Primary Source Knowledge (PSK) face a number of problems when they try attempting to make technical judgments in foreign domains.<sup>163</sup> By reading primary sources in isolation, it is impossible to acquire technical tacit knowledge and, more important, domain-specific social understanding. Those depending on PSK have to make policy-relevant technical judgements on the basis of ubiquitous discrimination.

An initial problem for those relying solely on PSK is that they cannot access the full scientific discourse. According to Collins and Evans, there is a significant difference between the “published discourse” and what might be called the “oral discourse” of a scientific community:

[I]t can be shown that what is found in the literature, if read by someone with no contact with the core-groups of scientists who actually carry out the research in disputed areas, can give a false impression of the content of the science as well as the level of certainty. Many of the papers in the professional literature are never read, so if one wants to gain something even approximating to a rough version of agreed scientific knowledge from published sources one has first to know what to read and what not to read; this requires social contact with the expert community.<sup>164</sup>

Collins and Evans argue that it is wrong to assume that the written and the oral discourse relating to a specific scientific domain are the same.<sup>165</sup> The non-expert, on the basis of exclusively reading scientific sources, is at risk of

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160. COLLINS & EVANS, *supra* note 15, at 14.

161. *Id.* at 22.

162. *Id.*

163. Martin Weinel, *Expertise and Inauthentic Scientific Controversies: What You Need to Know to Judge the Authenticity of Policy-Relevant Scientific Controversies*, in BETWEEN SCIENTISTS AND CITIZENS: PROCEEDINGS OF A CONFERENCE AT IOWA STATE UNIVERSITY 427 (Jean Goodwin ed., 2012); Harry Collins & Martin Weinel, *Transmuted Expertise: How Technical Non-Experts Can Assess Experts and Expertise*, 25 ARGUMENTATION 401 (2011).

164. COLLINS & EVANS, *supra* note 15, at 22.

165. *Id.* at 17.

developing a “false impression of the content of the science as well as the level of certainty.”<sup>166</sup> Even if it is assumed for a moment that oral and published scientific discourse overlap to such an extent that the difference between the two becomes almost irrelevant, someone relying upon Primary Source Knowledge (PSK) alone to understand science confronts other problems too.

First, there is often a simple logistical problem in that the body of technical literature on an issue can be so large that it becomes almost impossible to read everything that has been written on the subject. Second, even if it is assumed that an outsider is able to read every piece of literature, this still does not solve all of the problems of PSK. The next problem an actor relying solely upon PSK faces is to make a range of judgements such as judging the relevance of the literature, its relative importance, its reliability, as well as the quality or permissibility of certain technical claims. By virtue of having read papers in isolation, one is unlikely to be able to assess the credibility of the work given the inability of knowing how it is viewed by others in the field, the quality of the journal, and so on. The third problem outsiders will confront, relates to the assessment of the relative importance of technical claims made in the literature. A range of technical considerations impact on the interpretation of the relevance of a particular paper such as knowledge about the quality of the method employed in a paper, knowledge of the findings of similar studies and knowledge of the benefits against which the findings have to be balanced and so on. A fourth problem associated with trying to understand technicalities on the basis of solely reading literature is that it is very difficult to assess the quality of technical arguments. Outsiders might be able to assess the coherence and consistency of technical arguments even though they might not fully understand them. The problem is that the plausibility of arguments might hinge upon some technical claims that outsiders find impossible to evaluate in detail. Rather, more often one with PSK will have to take the claims of the paper on face value or on trust.<sup>167</sup>

#### F. *Interactional Research and Simulation (“Crash Test”) Research*

Of course, the foregoing coincides with the kinds of problems which Vick outlined in his account of the “traps for the unwary” legal interdisciplinarian.<sup>168</sup> The difference, however, is that what Vick conceptualizes as “traps” or “obstacles,” we understand to constitute insurmountable barriers in the context of interdisciplinary efforts of a lone researcher. The expertise criterion helps to demarcate between those with and without genuine technical understanding. As we illustrated in the previous section, those with high levels of explicit knowledge gained through reading primary scientific sources lack the domain-relevant tacit knowledge which is critical for the ability to make technical judgments on technical grounds. As

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166. *Id.* at 22.

167. For a fuller analysis of these issues and a case study which operationalizes them, see Martin Weinel, *Primary Source Knowledge and Technical Decision-Making: Mbeki and the AZT Debate*, 38 *STUD. HIST. & PHIL. SCI.* 748 (2007).

168. Vick, *supra* note 9, at 185.

such, it becomes easier to see how errors of the sort that Bagenstos and Schlanger made in their assessment of hedonic adaptation (and indeed, disability rights politics) and its applicability to the civil law of damages, can occur. On the basis of lacking specialist expertise, their evaluation of the science must be regarded as an illegitimate assessment of a technical issue.

It is argued that the obstacles for making technical judgments on the basis of technical considerations for those relying on PSK are insurmountable.<sup>169</sup> It has to be noted that PSK does not always lead to judgments that contradict those made by technical experts. Had Bagenstos and Schlanger consumed work in the field more broadly their views on hedonic damages may have been refined or their thesis at least disrupted (and would certainly have resulted in a very different and far more tentative paper). Nevertheless, in relation to those possessing PSK, the fact of broader reading cannot be depended upon; such readings of technical material are more likely to be based on chance and not on experience and genuine understanding.

These concerns may well be amplified in the context of the legal discipline in evaluating the kinds of skills and training offered to lawyers in preparing them for practice or academic careers. We have already noted contributors, who, concerned with the intersection between courtroom law, legal policy and science, attribute many of these problems to serious deficiencies in legal education. Law may often intersect with science, and science is surely critical to those who call out for law to be informed by the “real world,” but lawyers are not typically perceived as constituents for whom an understanding of scientific method is demanded.<sup>170</sup> As a result, other than those graduating from particularly enterprising law schools most lawyers lack basic linguistic abilities in science and scientific method.<sup>171</sup> This is pretty fundamental, for in the absence of an appreciation of the manner by which scientific knowledge is formed, it should be unsurprising that those who travel into new domains of knowledge for insight and inspiration will frequently, and unwittingly, overstep critical epistemic boundaries. Despite Simon’s encouraging view that academic law is “embracing empirical studies far more broadly than in the past and law faculties increasingly have the capacity to train lawyers in social science methodology,”<sup>172</sup> it remains the case that central to legal education is the aspiration to “produce skilled doctrinal lawyers.”<sup>173</sup> As Roger Cotterrell has recently come to reflect despite the prized status of socio-legal research, it “has not modified the most basic patterns of legal thinking. It has not much disturbed the jurists.”<sup>174</sup> Hillyard’s lament, in respect

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169. COLLINS & EVANS, *supra* note 15, at 52–54.

170. See generally Max Kennerly, *The Difference Between Scientific Evidence and The Scientific Method*, LITIG. & TRIAL (Apr.23, 2012), [www.litigationandtrial.com/2012/04/articles/litigation/scientific-evidence-and-the-scientific-method/](http://www.litigationandtrial.com/2012/04/articles/litigation/scientific-evidence-and-the-scientific-method/) (discussing the issues that lawyers have when using science in court).

171. See *id.* (detailing the importance of knowing scientific basics for the courtroom).

172. Jonathan Simon, Katz at Forty: A Sociological Jurisprudence Whose Time Has Come, 41 U.C. DAVIS L. REV. 935, 945 (2007).

173. Paddy Hillyard, *Law’s Empire: Socio-legal Empirical Research in the Twenty-first Century*, 34 J. L. & SOC’Y 266, 270 (2007).

174. Roger Cotterrell, *Socio-Legal Studies, Law Schools, and Legal and Social Theory* 3 (Queen Mary University of London, Legal Studies Research Paper No. 126, 2012), available at <http://ssrn.com/>

to some of the stubborn features of legal academia which constitute significant barriers to a different legal paradigm, remains every bit as germane over one decade later.

The requirements of professional practice place very real constraints on the undergraduate curriculum and the type of staff who can be recruited. . . . [T]here is little or no room for research training courses similar to those in other social sciences. . . . [Law] is characterized by the lone researcher who is not accustomed to working as part of a team, and law schools themselves have traditionally been physically and intellectually isolated from colleagues in the social sciences.<sup>175</sup>

Nonetheless, it is important not to overstate the potential benefits of even the most fundamental changes to legal education where grounding in scientific method becomes central. Undoubtedly, an appreciation of scientific method would provide the kind of epistemic humility that helps actors to understand the limits of their understanding and expertise. Nevertheless, this would underpin, rather than contradict, the kinds of conclusions that we have arrived at in respect of the interdisciplinary paradigm.

It should be emphasized that none of this points to a necessary demise in respect of the kind of research efforts that legal scholars can, or should, undertake. That would be a lamentable, if not unrealistic, conclusion. There is no doubt that the kind of work being undertaken in the context of the “behavioural turn” is valuable and important in pointing towards potential flaws in the existing regulatory architecture and to more fruitful possibilities for a social governance agenda. For most, and certainly those within the socio-legal tradition, the need for law to connect to the social world and to disrupt a field which some have argued, “is not really affected in any way whatsoever by the fact that a text or a precedent has had a negative social, political or economic effect,”<sup>176</sup> is critical and necessary. We do not seek to quell the appetite of authors who embrace insights from foreign domains of knowledge or to experiment with ideas; indeed such intellectual tourism is constitutive of work which is to a very significant degree valuable and necessary for the legal project.

Instead, and flowing from the theory of expertises, we argue for a key distinction to be drawn between two kinds of interdisciplinary efforts: *interactional research*<sup>177</sup> and *simulation research*. From a policy perspective, both should be regarded as having significant value for the project of law, though we should value them in *different* ways. In respect of interactional research, this follows the logic of what we argued earlier in this piece. While Douglas Vick commented that “[u]ntil there is greater acceptance by academic lawyers of collaborative research, meaningful disciplinary encounters involving law will remain elusive,”<sup>178</sup> our analysis points to the impossibility

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175. Hillyard, *supra* note 173, at 270.

176. Samuel, *supra* note 14, at 439.

177. The notion of ‘interactional research’ emerges from the theory of expertises, and specifically from the concept of ‘interactional expertise’ as one of the two forms of specialist tacit knowledge.

178. Vick, *supra* note 9, at 193.

of meaningful interdisciplinary encounters in the absence of collaborative research with those possessing specialist tacit knowledge from the non-legal domain. Yet while many point to the problems of collaborative work—the level of compromise, negotiation, time and learning required, to a degree that involves a “longer and more complex process than researching within a discipline”<sup>179</sup>—not all collaborative efforts need to consist of the enormous project work that is often envisaged. The kind of project work that led Bagenstos and Schlanger to apply hedonic adaptation and disability rights theory to the civil law of damages,<sup>180</sup> for example, was highly amenable to external evaluation by specialists from the non-law domains in question. A simple exchange would have quickly pointed to the fact that the thesis the authors were working with was not representative of the scientific field. As such, their work instead forwarded an empirical assertion rather than an argument justified by reference to empirical evidence. While such a dialogue would have shaped a quite different paper, both in form and substance, the authors’ approach to the civil law of damages could still have stood as a valuable hypothesis for scholars within a variety of fields to explore and test empirically with an eye to other normative concerns about the extent to which hedonic damages are viewed as a problematic category. From this perspective, we see Bagenstos and Schlanger’s work as holding significant merit, even if it holds no political or policy-making value. In this latter respect, this underpins the second category of interdisciplinarity, *simulation research*.

It is important to note that what we advocate in respect of this latter category itself is of a highly tentative nature. We do not seek here to expand too much on this aspect given that a broader conversation within legal scholarship is appropriate for its progression. The basic essence of *simulation research*, or “crash test research” is that it constitutes an open testing zone for modeling hypotheses, refining aspects of a problem and developing new research angles. Nevertheless, as the concept of “crash test” or “simulation” implies, such a process could not be undertaken in the real world given the highly experimental nature of such work, in which developers are testing out a broad range of variables, some of which may be wholly uncertain or unreliable. In the case of legal interdisciplinarity, uncertain or unreliable variables of this sort would include the introduction of non-legal domain knowledge, which would demand verification (interactional research), and indeed broader testing to underpin the applicability of the science to a live policy-context. As such, results of a test design should be considered productive of mere hypotheses, rather than fully-fledged ideas which could go live.

A number of points can be made in respect of our motivation for this category and the importance we afford it. Firstly, given the logic of our arguments so far, there is an opposite risk that we wish to temper: too strong a preoccupation with expertise and specialism can hinder the development of

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179. Anita Weinberg & Carol Harding, *Interdisciplinary Teaching and Collaboration in Higher Education: A Concept Whose Time Has Come*, 14 WASH. U. J.L. & POL’Y 15, 32 (2004).

180. Bagenstos & Schlanger, *supra* note 4, at 752.

knowledge and the formation of new ideas which could prove critical. As Stancil notes, “each discipline has something important to say about virtually every problem of social governance. Moreover, the complexities of the real world dictate that no single discipline standing alone can offer practical and effective solutions to those problems.”<sup>181</sup> Few of us have the time or ability to develop and maintain contributory expertise in two areas given that expertise extends beyond the possession of mere credentials and qualifications in a field, and requires continued social immersion in those fields. Furthermore, insofar as we noted the presence of light touch forms of collaboration, for many projects and for those entering into particularly complex fields, mere electronic communication will be insufficient. As such, many interdisciplinary projects will have significant barriers to the kind of collaborative ideal which underpins interactional research: temporal, spatial, institutional and economic. As such, a paradigm of interdisciplinarity which rests purely upon the interactional ideal, though critical for work that we can consider valuable in a political or policy-making context, could be deeply harmful if it became *the* model for interdisciplinary investigation. It would be tantamount to disciplining interdisciplinary work in problematic ways. For law, which is dominated by a lone researcher ideal, it would prove disastrous. Particular works which could be of great value would simply not occur. Secondly, and related to this, where simulation research is valued as a process of testing and design (rather than as holding immediate purchase to policy-makers or the development of law), concerns around the presence of mistakes of the kind we noted in respect of Bagenstos and Schlanger, dissipate rapidly. Even works replete with interdisciplinary misappropriations pose no genuine concerns where the audience knows to anticipate this as a strong possibility. It is important to recognize that there can be tremendous value in error (indeed the scientific paradigm hangs upon it). As Schulz argues, “far from being a sign of intellectual inferiority, the capacity to err is crucial to human cognition . . . . Thanks to error, we can revise our understanding of ourselves and amend our ideas about the world.”<sup>182</sup> This is not to advocate sloppiness in research, but simply to note that for the reasons that we have highlighted there is a high risk of error in lone interdisciplinarity. As part of academic creativity and a process which is seen as inherently work-in-progress, we can instead embrace it not only as a possibility, but a probability. As Kellert notes in a sophisticated and applied account of “borrowing” from chaos theory, “sometimes errors represent nothing more than honest and harmless mistakes.”<sup>183</sup> Even quite fundamental mistakes need not always result in terrible outcomes, but can actually result in positive ones, given that “many fruitful advances in social thought have come from situations in which the concept originating in natural science was not fully understood; Darwin got Malthus wrong, and Freud misread Helmholtz.”<sup>184</sup>

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181. Stancil, *supra* note 29, at 1582.

182. KATHRYN SCHULZ, BEING WRONG: ADVENTURES IN THE MARGIN OF ERROR 5 (2010).

183. KELLERT, *supra* note 50, at 130.

184. *Id.* at 128.

### III. CONCLUSION

Socio-legal scholarship (theory and empirical research) has to *invade the law school*. But this is certainly not to turn law schools into social science departments, and not to make legal analysis into sociological jurisprudence (that is, social science on tap to help the lawyers when they feel they need it). It is to make the study of law a great *conversation* that draws on the whole range of types of knowledge necessary to make that conversation an informed one.<sup>185</sup>

The quote above underpins the basic spirit of this contribution. The present piece positions itself as an interactional “socio-legal” engagement in applying an aspect of sociological research from the field of the Sociology of Expertise and Experience, to the domain of law. While Cotterrell speaks of the importance of an *informed* conversation<sup>186</sup> which is populated by a range of actors, this has been central to our thesis. The aim of this article has been to highlight the importance of ‘knowing what one is talking about,’ and in particular, underpinning the limits of what one *can* know and the implications for legal interdisciplinary academic research. We approached the problem domain with two particular ends in sight; the first of which has been to highlight the distinction between lone versus genuinely collaborative work in the context of researchers engaging with foreign domains of knowledge, or indeed of those coming to evaluate the reliability or usefulness of the resulting interdisciplinary works. Central to this has been the theory of expertise, which illustrates why interdisciplinary investigations conducted without interactional or contributory expertise will result in haphazard, erroneous or unreliable results so that we should place little if any value on those works from a policy-making angle. Conversely, interdisciplinary engagements which are the product of a genuine interdisciplinary collaboration are ones which will likely lead to sounder, more carefully compiled research outcomes which bear a more incremental character.

Our second aim has been to ensure that all forms of interdisciplinarity may have the opportunity to flourish. Although we argued that policy-making value can be attributed to interactional interdisciplinary endeavours, we noted that other forms of interdisciplinary engagement should also be seen as valuable. While falling short of the kind of work which could form the immediate basis of policy or social governance architecture, works of a more provisional and creative character, nevertheless hold great potential. These can prove critical to the identification of potentially promising hypotheses (or indeed flawed ones), illustrate the state of science in a particular field and its *potential* application to law, and importantly, act as a valuable precursor, or ‘under-labourer’ for interactional research. In this latter respect, insofar as some time was invested in assessing “problem” works such as that offered by Bagenstos and Schlanger, none of this is to diminish its academic value. Rather, it raises important questions directly and indirectly around the

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185. Cotterrell, *supra* note 174, at 4–5.

186. *Id.*

management of injury and harm in torts and the reparative ideal.

Our hesitancy in advocating “simulation research” more strongly than we have, relates in part to a concern that it requires more dedicated analysis than can be accommodated here, or by us alone. We believe that there is considerable promise in the distinction between interactional research and simulation research insofar as it fosters the broadest range of research, and in part describes a range of legal interdisciplinary endeavours that already populate legal journals, edited collections, monographs as well as existing project work—even if they are not presently typified as either *simulated* or *interactional*. Our hope is that the tools we outline help to make this distinction, which has “knowledge” at its heart, will prove to be useful for actors engaging in, or judging the value of legal interdisciplinary work. Nevertheless, we do recognize that there are other questions that can be validly raised in respect of how precisely these distinctions are operationalized within the legal discipline. For present purposes we consider the value of our contribution to lie in harmonizing and valuing a range of quite distinct approaches to the question of how interdisciplinarity ought to be done,<sup>187</sup> though critically by centralizing what we see as critical: the question of expertise, in following the epistemic logic of Collins and Evans’ theory of expertises. Nevertheless, in respect of simulated research, there are broader considerations that need to be taken into account. Insofar as Stancil notes that “there is virtually no place in the legal academy for pure curiosity-driven ‘basic research,’”<sup>188</sup> this constitutes, in our view, a significant hindrance to the kind of interdisciplinary work which could prove fruitful to the legal project, which may be unique in being both relatively autonomous from the scientific disciplines, but nevertheless critically dependent upon them.

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187. For an example of the exploration of different interdisciplinary paradigms occupied by scholars such as John Dewey, see Hans Kelsen & Niklas Luhmann, in Bart van Klink & Sanne Taekema, *A Dynamic Model of Interdisciplinarity. Limits and Possibilities of Interdisciplinary Research into Law* (Tilburg Working Paper Series on Jurisprudence and Legal History, Working Paper No. 08–02, 2008), available at <http://ssrn.com/abstract=1142847>.

188. Stancil, *supra* note 29, at 1583.