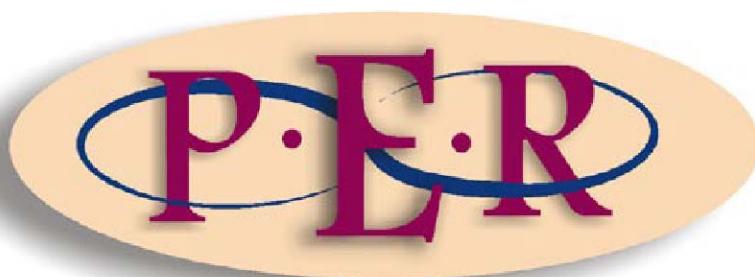


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## IS LAW SCIENCE?

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### 1 Introduction<sup>1</sup>

In 1935 legal philosopher Huntington Cairns stated that:

It is the contemporary belief, in American legal circles at all events, that law or jurisprudence, whatever it may have been in the past, has now the status of a social science. This is an assumption easier to make than to substantiate and in view of the increasing insistence upon this point, it is now appropriate to inquire whether or not it possesses a tangible foundation.<sup>2</sup>

This sentiment, expressed in 1935, still applies. In 2002 an American legal journal published an article where the question was rephrased into whether – or when – a Nobel Prize in "legal science" would be awarded.<sup>3</sup> Apart from the possible eligibility for accolades, the question of whether or not law is science is important to lawyers<sup>4</sup> for two reasons. In the first instance South African legislation defines science<sup>5</sup> but the courts have never been asked to interpret the relevant statutory provisions – it is quite conceivable that a court of law may have to address the question at some stage. In the second instance, scholarship requires reflection upon the nature of one's activities, which includes the question of whether or not our discipline, law, is science or scientific. Recently the question was contemplated by Kroeze as part of broader consideration of what interdisciplinary, multidisciplinary and trans-disciplinary research entails.<sup>6</sup> This article attempts to contribute to the debate from a South African legal and philosophical perspective and approaches the question from an angle different from Kroeze's.

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<sup>2</sup> Cairns 1935 *Philosophy of Science* 484.

<sup>3</sup> Ulen 2002 *U III L Rev* 875.

<sup>4</sup> The term "lawyer" will be defined in s 5 of this article. It is used in its generic sense for the moment.

<sup>5</sup> See s 4 of this article.

<sup>6</sup> Kroeze 2013 *PELJ* 36-50. Incidentally, it is submitted that this article constitutes trans-disciplinary research – also see footnote 34.

In the current standard work prescribed for most first-year students in Introduction to Law, "law" is defined as the body of rules or regulations that facilitate and regulate human interaction, order society, create certainty and are applied, interpreted and enforced by state institutions.<sup>7</sup> The authors of the textbook claim that law should reflect shared values. They state that "the law is a set of norms distinguishing good from bad. A norm is a rule regulating human conduct".<sup>8</sup> Earlier authors also describe the law with reference to its ordering function. As people are capable of making choices, law as a normative phenomenon is typical of human society.<sup>9</sup> Law is a product of custom, legislation and judicial development – it is a social ordering instrument that operates bottom-up as well as top-down.<sup>10</sup> This composite description of law will be accepted for the purposes of this contribution.<sup>11</sup>

In addition, lawyers often refer to their discipline as a science,<sup>12</sup> but this premise should not be accepted uncritically. There are two issues at stake: the implicit

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<sup>7</sup> Kleyn and Viljoen *Beginner's Guide* 2.

<sup>8</sup> Kleyn and Viljoen *Beginner's Guide* 3.

<sup>9</sup> Van Warmelo *Regsleer, Regswetenskap, Regsfilosofie* 29; Van Zyl and Van der Vyver *Inleiding* 1-5. Post *Introduction to the Law* 2 asserts that law would be superfluous had "men lived in a state of complete isolation from each other" and that even the most primitive societies function subject to law. Although law should reflect justice, there is a distinction – law is a body of rules, justice is an ideal – Post *Introduction to the Law* 10, 17.

<sup>10</sup> For the present purposes the author accepts the explanation of Berman *Law and Revolution* 557 that the Western concept of law is that it is both "part of the material base" and "part of the ideological superstructure", after he has suggested on 556 that each of the positivist theory of law (that it reflects the will of the lawmaker and can be used as an instrument of domination), the natural law view (that law is an expression of moral standards) and the social theory of law (that law is "an outgrowth of custom, a product of the historically rooted values and norms of the community) provides "one-third of the truth" regarding the nature of law.

<sup>11</sup> A detailed discussion of what law is does not form the focus of the present investigation. There are indeed many different approaches and views to defining the concept – see for example Berman and Greiner *Nature and Functions of Law* 16-37 and Post *Introduction to the Law* 7-17. Berman and Greiner *Nature and Functions of Law* 25-26 state: "The legal aspect of social order must be approached partly in terms of the particular moral principles which it embodies, partly in terms of the particular political authorities which shape it, and partly in terms of the particular historical experience and values which it expresses. Indeed, these are not three things but one thing viewed from three different angles." It is asserted that law should be defined in terms of its functions or objectives, not its origins or sanctions – Berman and Greiner *Nature and Functions of Law* 26; Post *Introduction to the Law* 7. Law exists to provide solutions when something goes wrong, when there are "actual or potential disruptions of patterns or norms of social behaviour" or conflict. It is there to resolve disputes; maintain social order; restore the social *equilibrium*; serve as a framework for establishing appropriate behaviour; regulate state, social or commercial action and mould the legal and moral attitudes of society – Berman and Greiner *Nature and Functions of Law* 27-28, 31-34; Post *Introduction to the Law* 4-5.

<sup>12</sup> The contemporary work of the Dutch author Jan Smits offers an excellent example. His main project is to define the purpose of legal research and his theory is that "the core of legal studies

assumption that a science is *something* that a discipline can be. The second is that the first typical answer offered to the question "is law a science?" is that law is indeed a science, as it is generally accepted as such. This assumption and "default" response will be analysed and be shown to offer inadequate theoretical justification for the conclusion reached. Other proposed demarcation criteria should therefore be examined. It is submitted that legal theory will benefit from and indeed requires the application of philosophical perspectives in order to answer the question: is law science?

However, this exercise is not as unproblematic as one may suppose, as views on science and what science is have changed considerably over the ages. The demarcation criteria (ie "tests" or "standards" to determine whether a discipline amounts to "science") that have been proposed by different philosophers of science differ substantially.<sup>13</sup> An analysis of the views that science is practised when the scientific method is used, that it can be falsified, that it amounts to puzzle-solving within a certain paradigm, that it renders beneficial results or that it involves abstraction and theorisation will be provided in section 3. The hypothesis is that the notion that science amounts to abstraction in a technical sense offers the best theoretical basis in the present context. On this basis, the statutory definitions of "science" and "research" in South Africa also require examination. This analysis is therefore an attempt to solve the central question in this article by allowing commentators on law, philosophers of science, philosophers of law and creators of law a say in the matter.<sup>14</sup>

The emphasis on science as a type of *activity* (as opposed to a *discipline*) that can either be classified as science or not will be explored in section 5. The activities of law students, practitioners, academics and law-makers will be measured against the

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[is] the normative question of what law ought to be" (Smits 2014 *Critical Analysis of Law* 76). He departs from the assumption that law is a science by referring to "legal science" in the introductory phases of most of his publications or simply regarding it as such. See Smits "Redefining Normative Legal Science" 45, Smits 2012 <http://elgarblog.wordpress.com/2012/08/15/what-do-legal-academics-do>.

<sup>13</sup> The 2400 year-long attempt to reach consensus on demarcation criteria has justly been classified as "not a very successful one" as there is still no general consensus on what the criteria are – Coletto 2013 *TD* 2.

<sup>14</sup> Coletto 2013 *TD* 1-2 as quoted in part in fn 34.

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proposed demarcation criterion to establish which, if any, activities would amount to "science".

However, to provide the requisite contextual background, the first point to consider is the traditional acceptance by lawyers that law is a science.

## 2 Traditional acceptance that law is a science<sup>15</sup>

Very few South African legal textbooks address the question of what legal or juridical science is, probably because its status as a science is assumed and elaboration is deemed unnecessary. Even in American textbooks, law is described as a science, albeit "an inexact science", without elaboration on the reasons for its being granted scientific status.<sup>16</sup>

From the time of the earliest establishment of schools by the Romans, law formed part of the curriculum taught to free persons.<sup>17</sup> When universities were established in Europe during the Middle Ages law was taught as a central discipline and law faculties were even regarded as *facultates superiores*, where a second degree could be obtained.<sup>18</sup> In most countries this remains the case to the present day. In South Africa, as in most other countries, a university degree is required for admission to the legal professions.<sup>19</sup>

In the United States of America, Christopher Columbus Langdell (1826-1906), Dean at Harvard Law School from 1870 to 1895, reformed the perceptions of law and legal education, and distinguished between law as a science and law as vocational legal

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<sup>15</sup> Although reference will be made to theorists from different international origins, the practical application of theories to determine the status of law as (possible) science will focus on the South African context.

<sup>16</sup> Post *Introduction to the Law* 8. The Dutch example of Smits (see fn 12) has already been alluded to.

<sup>17</sup> Du Plessis *Inleiding tot die Reg* 5.

<sup>18</sup> Du Plessis *Inleiding tot die Reg* 7. The other "superior" faculties were Theology and Medicine. A student had to obtain a first degree from a *subtilissima facultas* (such as Arts).

<sup>19</sup> Currently a *baccalaureus legum* (LLB) or equivalent – *Attorneys Act* 53 of 1997 s 2(1); *Admission of Advocates Act* 74 of 1964 s 3(2)(a); *Legal Practice Bill* B20-2012 s 26(1)(a). Although legal subjects are taught at various other tertiary institutions, including training colleges and universities of technology, the qualifications conferred do not offer access to the professions.

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training.<sup>20</sup> The practice of the "science of law" would require that students distil the general and fundamental principles of law from decided cases, which are seen as the "dataset" of the science, by using inductive reasoning.<sup>21</sup>

The legal principles so derived functioned as the constituent ontological units within the construct. From them, through the rigorous and almost Cartesian application of logic and deductive reasoning, a series of clear specific rules would be derived that would govern any given case. The specific rules themselves were formalistic in conception, meaning that they were framed in a manner that made their application uncontroversial when applied to stipulated facts. The rules would then be the bases of decision-making in future cases.<sup>22</sup>

Langdell stated:

If law not be a science, a university best consult its own dignity in declining to teach it. If it be not a science, it is a species of handicraft, and may best be learned by serving an apprenticeship to one who practises.<sup>23</sup>

His distinction between law as a handicraft and as a science may be tenuous, as his method of teaching law was the method used by practising lawyers.<sup>24</sup>

Like Langdell, the influential South African Professor Paul Van Warmelo<sup>25</sup> also came to the conclusion that the library is the legal scientist's "workshop",<sup>26</sup> a view that is hardly disputed today. For Langdell scientific study meant using the original sources, i.e. cases, and not relying on someone else's interpretation thereof.<sup>27</sup> He argued that law consists of doctrines and principles developed through the cases, often over centuries.<sup>28</sup>

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<sup>20</sup> Garvin 2003 *Harvard Magazine* 56-58; <http://hls.harvard.edu/dept/about/history/?redir=1>. He also introduced the combined Socratic and case law method, now commonly used in law schools all over the world.

<sup>21</sup> Hamoudi 2007 *Cornell Int'l LJ* 98; Stevens *Law School* 56; Speziale 1980 *Vt L Rev* 1-3.

<sup>22</sup> Hamoudi 2007 *Cornell Int'l LJ* 98-99, footnotes omitted.

<sup>23</sup> As quoted by Stevens *Law School* 52. Speziale 1980 *Vt L Rev* 4 relates how apprenticeships were the precursor to formal legal education in the USA.

<sup>24</sup> Speziale 1980 *Vt L Rev* 14-15.

<sup>25</sup> Van Warmelo *Regsleer, Regswetenskap, Regsfilosofie* 93.

<sup>26</sup> Stevens *Law School* 53; Speziale 1980 *VLR* 16.

<sup>27</sup> Speziale 1980 *Vt L Rev* 7-8.

<sup>28</sup> Langdell as quoted by Speziale 1980 *Vt L Rev* 12.

Law should be taught at universities, as "in the rest of the civilised world", and only universities could offer access to the required sources to study law as he proposed.<sup>29</sup> Unfortunately, Langdell never substantiated his argument with a definition of what science is and his own concept of science is unclear.<sup>30</sup>

Langdell's sentiments are endorsed by the South African legal philosopher LM du Plessis when he observes that the twofold task of a university, to wit teaching and research, requires a critical and creative engagement with knowledge. He refers to Pauw, who likewise distinguishes between a university and a vocational school, on the basis that the latter focuses merely on training in techniques. A university, on the other hand, provides theoretical knowledge that will enable the student to react to unfamiliar situations and to offer creative solutions to problems.<sup>31</sup>

This approach defines (legal) science with reference to what it is not and how it is practised. It is not a handicraft; neither is it the mere application of techniques. It is all about the distillation of principles through a process of reasoning and for this reason it is taught at university.<sup>32</sup> This approach provides a basis for distinguishing between science and non-science in law, yet it is submitted that it is still rudimentary and needs further development. A child who is scolded after grabbing a sibling's toy, may also distil the principle(s) of accepted behaviour through reasoning, but that would not be regarded as a scientific activity by anyone.

In addition, the idea is created that the scientific nature of law and the university as an institution are intertwined. It is true that development in many other disciplines is closely tied to universities and research institutions, but legal academics are not the sole creators of legal texts and, more importantly, they are not the (direct) authors of legal development. In South Africa, the unique Constitutional Assembly was responsible for this in the recent past, and legislatures and courts currently perform

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<sup>29</sup> Langdell as quoted by Speziale 1980 *Vt L Rev* 14.

<sup>30</sup> Speziale 1980 *Vt L Rev* 13.

<sup>31</sup> Du Plessis *Inleiding tot die Reg* 11-12.

<sup>32</sup> The nature of universities and whether or not all subjects taught at universities amount to science is a debate that will not be entered into here.

this function.<sup>33</sup> Therefore, the view of these two institutions on law and its possible scientific status should also be considered, as they form part of the voice of the discipline.<sup>34</sup> It appears as if South African courts have made ample use of terms denoting law as science, but it should be established if any particular meaning was attached to the words used and if so, what it was.

A search of the Juta law reports of South Africa yielded three results for the term "legal science". In one case the term appeared as part of a title of a source referred to in a footnote.<sup>35</sup> In the other two cases the term appeared as part of a quotation by authors who assumed the status of law as science without elaboration.<sup>36</sup> A search for "juridical science" resulted in four cases, but all four are references to articles published in the accredited journal titled "Tydskrif vir Regswetenskap / Journal for Juridical Science".<sup>37</sup> A search for the term "law as science" yielded no results, while "science of law" was more fruitful, with a total of 11 reported and 8 unreported South African cases.<sup>38</sup> However, in 17<sup>39</sup> of these cases the reference was included as part of (an obviously often quoted) statement by the American Justice Sutherland in

<sup>33</sup> The influence of legal academics' efforts on legal development will be explored in s 5 of this article.

<sup>34</sup> Coletto 2013 *TD* 1-2: "...issues concerning scientific status, the paradigms, inter-disciplinary dialogue and so forth constitute a big question mark for many academics. This is not surprising: such issues cannot be solved from inside any particular discipline. On the one hand, issues of demarcation and classification of the sciences are typical philosophical tasks. On the other hand, as Stoker (1971:41) puts it, when it comes to such issues, all the parties involved should have a say. Philosophy should not try to impose decisions, but should listen to the other sciences. This topic might therefore be regarded as one inviting to transdisciplinary research ...."

<sup>35</sup> *National Coalition for Gay and Lesbian Equality v Minister of Justice* 1999 1 SA 6 (CC) fn 17.

<sup>36</sup> *Intercompany Security Services (Cape) (Pty) Ltd v Transport & General Workers Union* 1995 16 ILJ 854 (LAC) 8591; *Brady-Hamilton Stevedore Co v MV Kalantiao* 1987 4 SA 250 (D) 258D.

<sup>37</sup> *Netshituka v Netshituka* 2011 5 SA 453 (SCA) para 10, fn 5; *Napier v Barkhuizen* 2006 4 SA 1 (SCA) fn 4; *Taylor v Kurtstag* 2005 1 SA 362 (W) 377C-D; *Bhe v Magistrate, Khayelitsha (Commission for Gender Equality as Amicus Curiae); Shibi v Sithole; South African Human Rights Commission v President of The Republic of South Africa* 2005 1 SA 580 (CC) fn 172.

<sup>38</sup> Juta also includes reportable judgements originating in Zimbabwe and Namibia. One Zimbabwean and three Namibian cases were also found.

<sup>39</sup> *S v Nkambule* 2011 JDR 0520 (GNP) para 41; *S v Pitso* 2002 2 SACR 686 (O) 593C-D; *S v Mbambo* 1999 2 SACR 421 (W) 426G-H; *S v Maduna* 1997 1 SA SACR 646 (T) 65 I-J; *S v Philemon* 1997 2 SACR 651 (W) 665B-C; *Mgcina v Regional Magistrate, Lenasia* 1997 2 SACR 711 (W) 716E-F; *Maduna v Die Streeklanddros TJ La Grange (Klerksdorp)* 1997 JDR 0337 (T) 7; *S v Ramokone* 1995 1 SACR 634 (O) 636H-I; *S v Zulu* 1990 1 SA 655 (T) 660H-I; *Nakani v Attorney-General, Ciskei* 1989 3 SA 655 (CK) 657B-C; *S v Radebe; S v Mbonani* 1988 1 SA 191 (T) 195E-G; *S v Khanyile* 1988 3 SA 795 (N) 803H-J; *S v Mabeti* 2005 JDR 1031 (T) 3 para 5; *S v Viljoen* 2003 JDR 0104 (T) 21 para 30; *S v Maake* 2003 JDR 0848 (T) 6 para 5; *S v Maema* 2002 JDR 0593 (T) 3 para 5; *S v Masogo* 2001 JDR 0582 (T) 4 para 5.

*Powell v Alabama*,<sup>40</sup> which deals with an unrepresented accused's precarious position due to a lack of knowledge of the "science of law". The other two references<sup>41</sup> appeared in a quotation of the classic author Voet, discussing the personal liability of judges for incorrect judgements due to their lack of knowledge or skill.

Although some reference to the "scientific status" of law can thus be found, in none of these cases was the legitimacy of regarding law as a science considered.

Judges writing in Afrikaans seem fonder of the term "regswetenskap", as a search for this term yielded 25 South African judgements.<sup>42</sup> In 10 of these the reference was to an article published in the "Tydskrif vir Regswetenskap / Journal for Juridical Science".<sup>43</sup> In 7 of the cases the term is used as a synonym for law or the legal system,<sup>44</sup> and in three cases "regswetenskap" is contrasted with legislation, without elaboration.<sup>45</sup> In two cases the practice and science of law are referred to as

<sup>40</sup> *Powell v Alabama* 287 US 45 (1932) 68-69.

<sup>41</sup> *Telematrix (Pty) Ltd t/a Matrix Vehicle Tracking v Advertising Standards Authority of South Africa* 2005 JDR 0985 (W) 11 para 7 and *Telematrix (Pty) Ltd t/a Matrix Vehicle Tracking v Advertising Standards Authority of South Africa* 2006 1 SA 461 (SCA) 470D-E.

<sup>42</sup> This may be as a result of the difference in approaches by traditionally English and Afrikaans universities as suggested by Kroeze 2013 *PELJ* 48.

<sup>43</sup> *Northview Shopping Centre (Pty) Ltd v Revelas Properties Johannesburg CC* 2010 3 SA 630 (SCA) para 25 / fn 16; *S v Damoyi* 2004 1 SACR 121 (C) 126E; *Sempapalele v Sempapalele* 2001 2 SA 306 (O) 310F-G; *Erlax Properties (Pty) Ltd v Registrar of Deeds* 1992 1 SA 879 (A) 881; *Black v Barklays Zimbabwe Nominees (Pvt) Ltd* 1990 1 SACR 433 (W) 434E-F; *De Kock v Jacobson* 1999 4 SA 346 (W) 348H; *S v Adams* 1986 4 SA 882 (A) 899H; *Britz v Britz* 2000 JDR 0194 (SCA) 11 para 16; *Olivier v Jonck BK h/a Bothaville Vleismark* 1999 JDR 0068 (O) 12; *Die Prokureursorde van die Oranje-Vrystaat v Schoeman* 1977 4 SA 588 (O) 592A.

<sup>44</sup> *Grobler v Naspers Bpk* 2004 4 SA 220 (C) 286B refers to vicarious liability as a field of the "regswetenskap"; *Van den Berg & Kie Rekenkundige Beampies v Boomprops* 1028 BK 1999 1 SA 780 (T) 792G: developments in English law should not necessarily determine development in the South African "regswetenskap"; *Rand Waterraad v Bothma* 1997 3 SA 120 (O) 134D-E: some notions with Greek origin where received in Roman law; in *Jubelius v Griesel* 1988 2 SA 610 (C) 624C-D the reference is to something that can be described as a title "in die regswetenskap"; *Kahn v Volschenk* 1986 3 SA 84 (A) 99H-I contains a translation of the classic author Van Bynkershoek who states that "daardie regswetenskap" would accommodate something; in *S v Bailey* 1982 3 SA 772 (A) 774D-E the state's counsel argued "die regswetenskap ken twee strafregtelike skuldbegrippe"; *Nortje v Pool* 1966 3 SA 96 (A) 115A-B refers to "Duitse en Italiaanse regswetenskap".

<sup>45</sup> In *S v Mbele* 1991 1 SA 307 (W) 309H-310B it was stated that an accused would not be guilty of a crime if he is not liable in terms of "die regswetenskap en selfs die 1988-Wet" (this statement was quoted with approval in *S v Pietersen* 1994 2 SACR 434 (C) 438D-G); *Lean v Van der Mescht* 1972 2 SA 100 (O) 107G: a certain question was not even answered in Dutch "regswetenskap of wetgewing".

separate issues, but they are not defined or distinguished.<sup>46</sup> In two other cases the reference is respectively to the title of a book and of a journal article.<sup>47</sup>

The only judgement that offers some distinction between legal science and legal practice is that of Judge Mostert in *Universiteit van Pretoria v Tommie Meyer Films (Edms) Bpk*,<sup>48</sup> where the extensive development of the concept "subjective right" and its accompanying system by academics in their theses, articles and books are clearly categorised as legal science that can, according to the court, be beneficially applied in legal practice<sup>49</sup> or law.

As demonstrated above, South African courts accept a distinction between legal practice and legal science without attempting any definitions of legal science or law as science. The highest courts in the country, the Constitutional Court and Supreme Court of Appeal, have never been requested to or deemed it necessary to address the issue.

The only statutory reference to law as a science is found in section 46 of the *Attorneys Act*,<sup>50</sup> where grants by the Attorneys Fidelity Fund's Board of Control to universities for "education or research in the science of law or in legal practice" are permitted. None of the terms is defined, yet it is clear that the distinction made above is accepted.

It is submitted that the distinction which the courts and legislature make between law as science and law as practice echoes the distinction referred to earlier, between legal education as "scientific" and university based, versus "vocational" training, which is focused on techniques.<sup>51</sup> Nonetheless, this distinction made by academics and courts does not provide a satisfactory answer to the questions of what a science is and why law should be regarded as such. The assistance of the theories

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<sup>46</sup> *S v Chavulla* 1999 1 SACR 39 (C) 461-J: certain rules have crystallised over the years in both legal science and legal practice; *Moeketsi v Minister van Justisie* 1988 4 SA 707 (T) 714A.

<sup>47</sup> *Mota v Moloantoa* 1984 4 SA 761 (O) 801F-G, 806F-G; *S v Collop* 1981 1 SA 150 (A) 155C.

<sup>48</sup> *Universiteit van Pretoria v Tommie Meyer Films (Edms) Bpk* 1977 4 SA 376 (T) 381-383.

<sup>49</sup> The Afrikaans judgement refers to "praktiese hantering van regsprobleme". *Universiteit van Pretoria v Tommie Meyer Films (Edms) Bpk* 1977 4 SA 376 (T) 381-383.

<sup>50</sup> *Attorneys Act* 53 of 1979.

<sup>51</sup> This distinction is rudimentary and should not be accepted without qualification. Refer to s 6 of this article.

developed by philosophers of science should therefore be elicited to provide a sound theoretical framework to formulate a demarcation criterion, as this kind of question is a typical (though not exclusively) philosophical project.<sup>52</sup>

### 3 Theoretical exploration

#### 3.1 *Science uses the scientific method*

By the late 19<sup>th</sup> century positivism had become the most influential movement in Western philosophy of science. Its main tenet is that the only reliable knowledge is scientific knowledge resulting from empirical data derived from experience. Scientific knowledge is based on sense-experience and science is the description and explanation of empirical facts. The content of science is therefore positive facts, established by the scientific method.<sup>53</sup>

For Auguste Comte (1794-1859), the father of positivist philosophy, the third and highest stage of human development is the positive phase, where all superstition (religion included) and metaphysics are abandoned and (empirical) science rules.<sup>54</sup> For him, the main aims of science are prediction and explanation of phenomena.<sup>55</sup> He distinguishes between meaning and demarcation, but it seems as if he conflated these concepts. In his view, science is predictive (denoting meaning) and verifiable (demarcation); and metaphysics cannot be scientific as it is neither predictive nor verifiable. Isolated facts that do not form part of a system are verifiable but non-predictive, and are thus not scientific.<sup>56</sup>

The view that science could provide irrefutable and objective answers to problems and that it is indeed the only defensible path to the truth became the norm in

<sup>52</sup> Coletto 2013 *TD* 1, Kroeze 2013 *PELJ* 37.

<sup>53</sup> Stafleu 1980 [http://www.freewebs.com/stafleu/stafleu\\_time\\_and\\_again\\_Ch1.pdf](http://www.freewebs.com/stafleu/stafleu_time_and_again_Ch1.pdf) 1; Strauss 2004 *JNGS* 58.

<sup>54</sup> Mautner *Dictionary of Philosophy* 114, 482; Speziale 1980 *Vt L Rev* 2.

<sup>55</sup> Laudan 1971 *Philosophy of Science* 36, 37.

<sup>56</sup> Laudan 1971 *Philosophy of Science* 40-41. Comte required "a systematicity and a generality" for "genuine scientific systems", Laudan 1971 *Philosophy of Science* 40. Later in life Comte included sociology and ethics in his list of sciences, but not disciplines like law or history - Coletto 2011 *Journal for Christian Scholarship* 65; Coletto 2013 *Koers* 2.

Western thought.<sup>57</sup> This view obviously did not accommodate any discipline that did not use the "scientific method" – natural sciences that were developed using experiments and empirically verifiable data provided the model to be emulated. Although this view is still prevalent in some circles even today, there has been a dramatic shift from this position in the twentieth century.<sup>58</sup> Karl Popper was among the first philosophers of science to move away from the position that science is an exact, objective and purely value free enterprise that comprises observations and inductive reasoning.

### ***3.2 Science is susceptible to falsification***

Karl Popper (1902-1994) states that metaphysical beliefs, the scientist's "horizon of expectations"<sup>59</sup> and scientific hypotheses influence science – a move away from the positivists' and empiricists' contention that objective empirical facts are obtainable by using the "scientific method" of observation and verification. Popper himself emphasises observation, but adds that it "is always preceded by a particular interest, a question or a problem – in short, by something theoretical".<sup>60</sup> A problem is identified and a hypothesis is formed and only then does the planned observation take place. After this a theory is formulated and accepted, as long as it is not falsified.<sup>61</sup>

For Popper, science is the activity of problem-solving with a critical attitude.<sup>62</sup> His approach to problems in science has been likened to a preacher's approach to sin: redemption cannot be preached without acceptance of the existence of sin.<sup>63</sup> If there is no problem, there is no science. The aim of science is to establish truth, in the

<sup>57</sup> From 1923 onward the members of the Vienna Circle advocated logical positivism, accepting only analytical statements and those that could be tested by means of perceptual experience as scientific – Mautner *Dictionary of Philosophy* 646. Science replaced the primacy of religion as the ultimate answer to life's questions.

<sup>58</sup> Laudan 1987 *Am Phil Q* 19. Stafleu 1980 *Philosophia Reformata* 47 calls his move away from logical empiricism a "revolution". Caudill 2011 *Pro Rege* 4 points out that the idealised view of science as an objective enterprise did not take into account the realities of "ambition, persuasion, funding bias, or cultural values ... personal values, consensus, or institutional gatekeeping".

<sup>59</sup> Popper *Conjectures and Refutations* 47.

<sup>60</sup> Popper *Objective Knowledge* 342. Strauss 2004 *JNGS* 60 labels Popper as a "neopositivist".

<sup>61</sup> Popper *Conjectures and Refutations* 47-48; Popper *Objective Knowledge* 343-344, 346.

<sup>62</sup> Popper *Objective Knowledge* 347.

<sup>63</sup> Settle 1979 *Systematic Zoology* 521; Strauss 2004 *JNGS* 63.

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sense of correspondence with facts,<sup>64</sup> although one cannot be absolutely sure when it has been found.<sup>65</sup> Scientific progress occurs when theories are refuted and new ones are proposed – in this way we move closer to the truth, and a higher level of verisimilitude or truth-likeness is reached.<sup>66</sup> Scientific tradition consists of the passing on of theories coupled with a critical attitude, a willingness to question, test and even abandon refuted theories.<sup>67</sup>

The task of science is twofold: it must theoretically explain phenomena (i.e. make the unknown known) and it is then used for prediction or technically applied.<sup>68</sup> Scientific theories must "transcend the empirical instances which gave rise to them", otherwise they will merely amount to circular explanations.<sup>69</sup> Science can also probe the procedure of testing, and theories must be testable. Theories that are easier to falsify are also those that are "better testable".<sup>70</sup>

In Popper's words:

The progress of science consists in trials, in the elimination of errors, and in further trials guided by the experience acquired in the course of previous trial and errors. No particular theory may ever be regarded as absolutely certain: every theory may become problematical, no matter how well corroborated it may seem now. No scientific theory is sacrosanct or beyond criticism.<sup>71</sup>

For Popper the demarcation question, i.e. what type of activity qualifies as science and what not, was central. The criterion applied for demarcation is "falsifiability, or refutability, or testability".<sup>72</sup> This implied that confirmation of a theory is not a measure of its scientific status, as confirmations are easily obtained. As a consequence, an irrefutable theory is not a scientific theory. Only refutable or falsifiable theories (and especially those that are more testable) are scientific. A refutable theory is one that is "capable of conflicting with possible, or conceivable,

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<sup>64</sup> Coletto 2009 *Journal for Christian Scholarship* 158.

<sup>65</sup> Popper *Conjectures and Refutations* 56; Settle 1979 *Systematic Zoology* 524; Stanford Encyclopedia of Philosophy 2013 <http://plato.stanford.edu/entries/popper/> 4.

<sup>66</sup> Coletto 2009 *Journal for Christian Scholarship* 158; Encyclopedia of Philosophy 2013 <http://plato.stanford.edu/entries/popper/> 10, 11.

<sup>67</sup> Popper *Conjectures and Refutations* 50.

<sup>68</sup> Popper *Objective Knowledge* 349.

<sup>69</sup> Popper *Objective Knowledge* 353.

<sup>70</sup> Popper *Objective Knowledge* 353, 356.

<sup>71</sup> Popper *Objective Knowledge* 359-360.

<sup>72</sup> Popper *Conjectures and Refutations* 37.

observations".<sup>73</sup> Corroborating evidence should be taken into account only if it is the result of a genuine (but unsuccessful) attempt to falsify the theory. Even when falsified, some adherents will still uphold a theory by adding *ad hoc* adjustments or re-interpretations that will "save" it from being refuted. This will, however, lead to a lowering of the theory's "scientific status".<sup>74</sup>

By applying Popper's demarcation criterion, astrology does not qualify as a science but as a pseudo-science, as its vaguely formulated predictions are virtually irrefutable and are not really predictive. The same applies to Marx's theory of history – the added *ad hoc* adjustments to save the theory from refutation diminish its status. The psycho-analytic theories of Freud and Adler also do not qualify as science as they simply cannot be tested and "no conceivable human behaviour ... could contradict them".<sup>75</sup> However, they are pre-scientific as they contain useful truths and have the potential to develop into scientific theories.<sup>76</sup> Although many scientific theories originate from myths, the myths themselves are not scientific; nobody even attempts to falsify them. Metaphysics and religion would therefore not qualify as science.

Falsifiability as the demarcation criterion should be seen against the background of Popper's construction of science: the presumption that problems exist, the realist aim of reaching true explanations on an empirical basis, as well as the stimulation of the criticism of existing theories.<sup>77</sup> Falsification does not occur after one refuting observation, but after a "critical mass" of refutations has been recognised.

For Stafleu, Popper's criterion of falsification is a welcome move away from positivism, but

... is only sufficient to "demarcate" scientific from non-scientific law statements. Regardless of how much evidence may "corroborate" a natural law statement, acceptance of the statement as law is always a matter of faith. A law statement is

<sup>73</sup> Popper *Conjectures and Refutations* 39.

<sup>74</sup> Popper *Conjectures and Refutations* 36-37.

<sup>75</sup> Popper *Conjectures and Refutations* 37, 38; Encyclopedia of Philosophy 2013 <http://plato.stanford.edu/entries/popper/> 4-5.

<sup>76</sup> Encyclopedia of Philosophy 2013 <http://plato.stanford.edu/entries/popper/> 6.

<sup>77</sup> Settle 1979 *Systematic Zoology* 529; Encyclopedia of Philosophy 2013 <http://plato.stanford.edu/entries/popper/> 6.

ultimately *believed* to be true, because of convincing evidence supporting it. This belief does not *prove* that the law statement is true, for such proof does not exist.<sup>78</sup>

Although he probably never intended the net to be cast so wide, Popper in fact opened up the possibility that disciplines that were previously not regarded as scientific could now be classified as such. His criterion is, however, still partly couched in the language and style of the empiricists, and non-natural sciences still do not conform to his criterion.<sup>79</sup>

Nevertheless, Popper is criticised for not supplying an exact criterion for the conclusive acknowledgement of falsification and consequently the acceptance of a new theory. His statement that the abandonment of the old theory in favour of the new is a "free decision" may in fact be seen as arbitrary. In addition, most theories continue to thrive in the face of anomalies.<sup>80</sup>

Popper was also sharply criticised by Thomas Kuhn, who argued that Popper was not a naïve falsificationist but may "legitimately be treated as one" as the question still remains what falsification is, "if it is not conclusive disproof"?<sup>81</sup> He therefore suggested an alternative approach.

Popper denies the existence of a single "scientific method" but states that theories can be arrived at in many ways. His approach is a move away from empiricism but not a total abandonment thereof, as he states that experience does not determine theory but can refute it.<sup>82</sup> Unwritten codes exist in the scientific community that prescribe which empirical "evidence" and which theory is acceptable.<sup>83</sup>

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<sup>78</sup> Stafleu 1980 [http://www.freewebs.com/stafleu/stafleu\\_time\\_and\\_again\\_Ch1.pdf](http://www.freewebs.com/stafleu/stafleu_time_and_again_Ch1.pdf) 9. Note that the term "law" is here applied in the non-juristic sense, as a rule that is true or absolute, as the term is used in the natural sciences.

<sup>79</sup> Coletto 2011 *Journal for Christian Scholarship* 68.

<sup>80</sup> Encyclopedia of Philosophy 2013 <http://plato.stanford.edu/entries/popper/> 20-21; Ulen 2002 *U III L Rev* 883.

<sup>81</sup> Kuhn "Logic of Discovery" 14, 15.

<sup>82</sup> Encyclopedia of Philosophy 2013 <http://plato.stanford.edu/entries/popper/> 6, 8.

<sup>83</sup> Stafleu 1980 [http://www.freewebs.com/stafleu/stafleu\\_time\\_and\\_again\\_Ch1.pdf](http://www.freewebs.com/stafleu/stafleu_time_and_again_Ch1.pdf) 9.

### ***3.3 Science is puzzle-solving within a paradigm***

According to Thomas Kuhn (1922–1996), science is not the series of dramatic moments of refutation depicted by Popper. The acceptance of a new theory is actually a rare and extraordinary occurrence.<sup>84</sup> Kuhn sees science not primarily as a series of revolutionary discoveries or great events, but more modestly as puzzle-solving.<sup>85</sup> In the case of a revolutionary discovery, the solution may be hypothesised but it is not pre-established. When solving a puzzle, the final picture or desired result is known from the outset.<sup>86</sup>

Most of the time scientists practice "normal science", which could be described as fitting the pieces of a puzzle together.<sup>87</sup> "It is normal science ... rather than extraordinary science which most clearly distinguishes science from other enterprises".<sup>88</sup> This type of science seldom attracts interest outside the profession, as the general public is not interested in working out the finer nuances of a process but in the principles underlying the paradigm.<sup>89</sup>

He established the concept of a paradigm as a "well-articulated and widely received theory" or shared set of beliefs that demand shared educational goals and techniques.<sup>90</sup> Once a paradigm has been established, the debate on fundamentals ceases and the serious and specialised scientific work (or paradigm-articulation) can commence, as the acceptance of the paradigm or theory itself still leaves important practical questions unanswered.<sup>91</sup>

A pre-scientific community has no single, accepted theory or paradigm, but once such a theory or paradigm has been accepted the discipline becomes a mature science where energy and time are spent on solving the puzzles left by the acceptance of the paradigm. Typically, after some time a number of anomalies will

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<sup>84</sup> Kuhn "Function of Dogma" 358, Kuhn "Logic of Discovery" 19.

<sup>85</sup> Coletto 2009 *Journal for Christian Scholarship* 159.

<sup>86</sup> Kuhn "Function of Dogma" 362.

<sup>87</sup> Kuhn "Logic of Discovery" 4-5.

<sup>88</sup> Kuhn "Logic of Discovery" 6.

<sup>89</sup> Kuhn "Function of Dogma" 359-360.

<sup>90</sup> Kuhn "Function of Dogma" 356, 359, Kuhn "Postscript" 177.

<sup>91</sup> Kuhn "Function of Dogma" 356-358, 360.

arise and if these accrue, they will lead to a crisis in the scientific community, which will result in a brief period of extraordinary science, marked by critical discourse. After this, a new theory is accepted as the prevailing paradigm. The process then repeats itself.<sup>92</sup>

The "abandonment of critical discourse" (not its acceptance, as Popper has it) and the acceptance of a *single* paradigm "marks the transition into a science".<sup>93</sup> Later Kuhn states that the presence of a paradigm is not decisive, but its nature is. A paradigm should identify challenging puzzles, supply clues to their solution and guarantee success to the competent.<sup>94</sup> The purpose of normal science is to bring the current paradigm "into closer and closer agreement with nature".<sup>95</sup>

The paradigm also functions as a "dogma", so to speak. Scientific education inculcates a specific way of thinking, "viewing the world and ... practising science in it".<sup>96</sup> This is so rigid that only systematic theology may possibly trump it.<sup>97</sup> Students are presented with a range of givens; since the early nineteenth century science textbooks have generally not exposed differing views but presented the "facts" in terms of the current predominant paradigm.<sup>98</sup> The paradigm determines the problems as well as acceptable solutions to them. Students are dogmatically initiated into a discipline and method they cannot criticise or evaluate as they are not exposed to alternatives.<sup>99</sup> In fact, adherents to old paradigms are hardly ever convinced of the merits of a new paradigm. The problem of scientific dialogue is nevertheless solved when they are eventually replaced by a new generation.<sup>100</sup> This new generation then banishes the old textbooks "from the active departmental library to desuetude in the general university depository".<sup>101</sup>

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<sup>92</sup> Kuhn "Postscript" 177; Kuhn "Logic of Discovery" 7.

<sup>93</sup> Kuhn "Logic of Discovery" 6; Kuhn "Function of Dogma" 352.

<sup>94</sup> Kuhn "Postscript" 180.

<sup>95</sup> Kuhn "Function of Dogma" 300.

<sup>96</sup> Kuhn "Function of Dogma" 349.

<sup>97</sup> Kuhn "Function of Dogma" 350.

<sup>98</sup> Kuhn "Function of Dogma" 350, 351.

<sup>99</sup> Kuhn "Function of Dogma" 351.

<sup>100</sup> Kuhn "Function of Dogma" 348.

<sup>101</sup> Kuhn "Function of Dogma" 352-353.

Kuhn distinguishes between "the sciences", the humanities and the social sciences.<sup>102</sup> The arts, humanities and most of the social sciences are similar to pre-paradigmatic science, i.e. not yet sciences in Kuhn's view.<sup>103</sup>

His theory would leave room for the acceptance of the so-called humanities, or the disciplines concerned with human culture, to be classified as sciences. The theory itself has, however, been developed from the perspective of and has been formulated in the language of the natural sciences. In a discipline like law, where jurisdiction-specific binding legal rules are continuously developed by competent lawmakers, it is difficult if not impossible to identify a single paradigm or disciplinary matrix. It is even more difficult to argue that what legal practitioners or scholars do will bring them or their discipline "into closer and closer agreement with nature".

Kuhn's approach thus reveals a predilection towards the natural sciences and an antipathy towards disciplines where no definite "paradigm" can be identified. It can be argued that it unintentionally broadens the net of "science" to include a broad range of activities, as long as they are performed within a certain paradigm.

It cannot be stated that Kuhn's theory has been generally accepted. His insistence on the exclusivity of a paradigm as the indicator of a mature or true science is called a "monomaniac concern with only one single point of view" by Feyerabend,<sup>104</sup> who also describes this as dogmatic, authoritarian and narrow-minded. Feyerabend even states that in effect a "closing of [the scientist's] mind" is required to practise normal science.<sup>105</sup> Popper describes the normal scientist as "a person one ought to be sorry for",<sup>106</sup> as opposed to Kuhn's optimistic insistence on the positive role dogma plays in science.

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<sup>102</sup> Kuhn "Function of Dogma" 350.

<sup>103</sup> Coletto 2011 *Journal for Christian Scholarship* 72.

<sup>104</sup> Feyerabend "Consolation for the Specialist" 201.

<sup>105</sup> Feyerabend "Consolation for the Specialist" 205. This actually leads to the questioning of how competing paradigms originate - Feyerabend "Consolation for the Specialist" 206-207.

<sup>106</sup> Popper "Normal Science and its Dangers" 52.

It is submitted that a more precise criterion is needed. The next possibility to be investigated is the unconventional, more radical view proposed by a next wave of philosophers of science, also referred to as the anarchist stance.

### ***3.4 Science renders beneficial results***

To a certain extent Paul Feyerabend (1924-1994) avoids the question as to what a science is. He sometimes distinguishes between pre-scientific suppositions and scientific endeavours, but never really provides a clear set of demarcation criteria. He was branded an anti-scientist, as he unequivocally rejected the exalted status attributed to natural science in most contemporary Western societies.

He approaches the issue pragmatically. The question is not what science is, but "what is so great about science?"<sup>107</sup> Science is useful as a method of acquiring knowledge, but it should not be seen as the only or best method in which reliable knowledge can be obtained. All solutions offered by science should also not be accepted as the gospel truth and theories proposed by scientists should not automatically be preferred to popular theories.<sup>108</sup>

He proposes that the broadest possible range of alternatives should be left open, as the emphasis is not on the process but on the result, the impact on society.<sup>109</sup> A useful judgement should be facilitated, and to get there "anything goes".<sup>110</sup>

Feyerabend does not always take up a position with the seriousness one expects, and often repudiates earlier statements or explains them away as jest. His declared boredom with astrology contrasts with his defence thereof in the face of attacks by physicists who deem themselves to be non-superstitious.<sup>111</sup> Who knows whether the defence was indeed serious or not?

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<sup>107</sup> Preston 2009 <http://plato.stanford.edu/entries/feyerabend> 27.

<sup>108</sup> Lugg 1977 *Can J Philos* 769, 771. Coletto 2013 *Koers* 5 argues that we no longer live in the "age of science" or "reason" and that postmodernism has brought with it a measure of distrust in "science".

<sup>109</sup> Coletto 2009 *Journal for Christian Scholarship* 164.

<sup>110</sup> Feyerabend *Against Method* 23.

<sup>111</sup> Lloyd 1997 *Philosophy of Science* 401-402.

Feyerabend has been severely criticised for his pragmatism, as it has been argued that all non-scientists can now question and attack theories they know virtually nothing about.<sup>112</sup> It has even been stated that the acceptance of the "anything goes" principle would eventually lead to the demise or collapse of all demarcation criteria for science and technology. This rests on the premise that "anything goes" references a value judgement. However, it does not, as Feyerabend regards some theories as better than others, and notes that (even) radical anarchists would make rational choices once confronted with the options.<sup>113</sup>

Preston<sup>114</sup> notes that Feyerabend later rejected the idea of "science", stating that it was an empty label. He bases this opinion on a quotation to the effect that terms like *science* or *art* are "temporary collecting-bags containing a great variety of product" of varying quality. Being only collecting-bags, they are not necessary for reality and can be discarded. Farrell<sup>115</sup> disagrees with this interpretation as he, like Lloyd and Lugg, constructs Feyerabend's theory more moderately. Feyerabend rhetorically proposed the possibility of believing in the Homeric gods, astrology and witchcraft, to emphasise their swift and possibly unfounded dismissal by science. He held that they should be entertained as part of the "range of possible unique circumstances and conditions". This interpretation, which acknowledges that Feyerabend retains (a measure of) realism, is based on a broader reading of Feyerabend's writings and not merely on selected passages, but Farrell acknowledges that Feyerabend's ambiguity and isolated remarks open up the possibility for an interpretation such as Preston's.

Feyerabend thus makes the ultimate move to do away with demarcation criteria. He seems to define science as one of the many enterprises that yield interesting or useful knowledge. It is less useful to ask how the knowledge was obtained or even what it is about than to what extent it can be usefully employed. The problem with this approach is that in essence it sidesteps the demarcation question and leaves the problem unsolved.

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<sup>112</sup> Meynell 1978 *Philosophy Quarterly* 249.

<sup>113</sup> Lugg 1977 *Can J Philos* 770.

<sup>114</sup> Preston 1997 *Philosophy of Science* 424.

<sup>115</sup> Farrell 2001 *JGPS* 364-367.

Numerous other demarcation criteria have been proposed over the years, but it is practically impossible to analyse all of them. It is submitted that the next group of scholars offers a plausible solution to the problem.

### ***3.5 Science is abstraction***

Although relatively few South African legal scholars have engaged with the question this article addresses, most of those who have done so seem to be in agreement that law is a science, as it involves abstraction (or "lifting up") in the sense envisaged by a relatively small philosophical school of which the Dutch philosophers Herman Dooyeweerd (1894-1977), Dirk Stafleu (1937-) and the South African Danie Strauss (1946-) are proponents.<sup>116</sup> The views of these philosophers and their South African adherents in the legal fraternity will now be considered.

Herman Dooyeweerd regards scientific knowledge as a systematic and coherent unit.<sup>117</sup> He defines science in terms of activity leading to knowledge. However, not any thought process will "qualify" as being scientific. What he calls the naive experience of reality or thought involves the observation of reality in an undifferentiated way without any theorisation, whilst scientific thinking approaches reality within the context of one or a few of the modalities that Dooyeweerd identified, and involves the abstraction of reality so perceived.<sup>118</sup> The modalities are aspects of reality itself and "ways of observing the world in which we live".<sup>119</sup> For example, should a shipwrecked person who is washed ashore recognise a strange tree and seek shelter in its shade, that will be regarded as a naive experience. However, if the same person (the subject) studies the same tree (the object) to ascertain what its botanical properties are in order to establish how it should be

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<sup>116</sup> A number of others have contributed to this debate, but for practical purposes the present discussion will be limited to Dooyeweerd, Stafleu and Strauss. For a more comprehensive discussion see Coletto 2011 *Acta Academica* 41-61.

<sup>117</sup> Dooyeweerd *Dictaat* 57 states that the contribution of legal commentators during the fifteenth and sixteenth centuries was not systematic and lacked a proper philosophical basis ("behoorlijk wijsgeerige fundering").

<sup>118</sup> Dooyeweerd *Encyclopaedia* 23, 26-27. The fifteen modalities are: numeric, spatial, kinematic, physical, biotic, sensory, logical, historical, lingual, social, economic, aesthetic, legal, ethical and certitudinal (Coletto 2013 *TD* 7). See Strauss 2006 *Journal for Christian Scholarship* 61-80 for an in-depth discussion of Dooyeweerd's theory of modal aspects.

<sup>119</sup> Coletto 2013 *TD* 7.

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classified, the subject is approaching the object and analysing its individual properties in a theoretical way, using the biotic modality as the entry point or "channel" through which the object is approached.<sup>120</sup>

Such an act of abstraction, to "make an aspect into a problem", is theoretical thinking.<sup>121</sup> The so-called "special sciences" like mathematics, biology and law (which Dooyeweerd deems a science as defined) thus approach reality from different perspectives and focus on changeable phenomena *within* a specific modality and with that specific point of entry. Each modality and special science deals with the cosmos and reality in its own way.<sup>122</sup> The human subject distinguishes different aspects of an object, examines the object from the antithetic position (i.e. as opposed to the logical function of the act of thinking) and synthesises this knowledge to form a logical comprehension of the object.<sup>123</sup> This also leads to the phenomenon of subject-specific terminology.<sup>124</sup>

According to the system proposed by Dooyeweerd, the six "lower" or foundational modalities relate to nature, where certain laws apply to objects, whereas the nine "higher" or more complex modalities represent the normative side of the cosmos. Positivised laws in these modalities are referred to as *norms*. Whereas a law of nature states what is, a norm states what should be.<sup>125</sup> As the juridical aspect of reality or the cosmos is thus defined as a distinct sphere by Dooyeweerd, the analysis, abstraction and synthesis of its rules on the one hand and persons and things on the other hand will be a science. As the juridical modality falls within the normative category, law is regarded as a normative science.

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<sup>120</sup> Coletto 2013 *TD* 7.

<sup>121</sup> Dooyeweerd *Encyclopaedia* 28.

<sup>122</sup> Dooyeweerd *Encyclopaedia* 28. Philosophy is not a special science as it considers the totality of modalities themselves as well as their coherence.

<sup>123</sup> Van Zyl and Van der Vyver *Inleiding* 26. The example used is the process to establish what the legal function of the object *chair* would be.

<sup>124</sup> Van Zyl and Van der Vyver *Inleiding* 33. This construction is subject to the principle of sphere sovereignty, which means that every sphere has its own laws and the one cannot be reduced to the other. One sphere should also not be absolutised as this would lead to "isms" such as historicism, which reduces the entire universe, including law, to an inevitable result of historical developments (Van Zyl and Van der Vyver *Inleiding* 30-31). Whereas sphere sovereignty describes the uniqueness of each modality, sphere universality refers to the cohesion of the different spheres (Van Zyl and Van der Vyver *Inleiding* 34).

<sup>125</sup> Van Zyl and Van der Vyver *Inleiding* 37, Coletto 2013 *TD* 7.

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This approach does not distinguish among "social sciences", "humanities" or "natural sciences" and avoids the vague distinctions and regular overlaps that characterise such a classification.<sup>126</sup>

Under the influence of Stoker and Dooyeweerd, Van Zyl and Van der Vyver (writing in the 1980s) regard law as a science, as it is knowledge that has as far as possible been technically and methodologically verified and systematised or categorised.<sup>127</sup> They distinguish two main categories of science: philosophy and the special disciplines.<sup>128</sup> Philosophy asks how the cosmos, laws and modalities differ, correspond and "hang together", while the special sciences are linked to the modalities. The specific sciences abstract a certain modality and focus the enquiry on that. In this regard, law as science deals with the juridical laws that create, limit and harmonise the power, rights and duties of persons through the principle of retribution. Each modality consists of objects and subjects and the laws they are subjected to. The juridical modality entails legal principles and positive law<sup>129</sup> on the law side, and on the subject side it entails persons, animals, plants, things, etc.<sup>130</sup>

In their wake, Van Niekerk states that legal phenomena encountered in the positive law are juridically qualified by means of an empirical inductive method and that this results in empirical legal notions. The process of classification entails definitions "*per genus proximum et differentia specificum*".<sup>131</sup> Through this continuous process of abstraction and comparison with the positive law, general notions are developed inductively and this leads to the "highest empirical legal notions".<sup>132</sup> Although Van Niekerk states that he aims to define law and legal science, unfortunately these

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<sup>126</sup> Coletto 2013 *TD* 8, 10-11.

<sup>127</sup> HG Stoker, as quoted by Van Zyl and Van der Vyver *Inleiding* 25.

<sup>128</sup> Van Zyl and Van der Vyver *Inleiding* 26-27.

<sup>129</sup> In a technical sense this refers to laws that have been properly promulgated or legal principles that have been authoritatively laid down – ie the positive law is the law as it is, as it is laid down by the legislator and enforced by the courts. Stoker *Aard en Rol van die Reg* 9-10 states that it is *positive law*, as it has been positivised by man. A reluctance to question the positive law on normative level leads to legal positivism, which should be avoided.

<sup>130</sup> Van Zyl and Van der Vyver *Inleiding* 28.

<sup>131</sup> Van Niekerk *Algemene Regsleer* 70.

<sup>132</sup> Author's own translation from Afrikaans.

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definitions are never supplied, as his discussion ventures into an analysis of Dooyeweerd's theory.<sup>133</sup>

In 1990 Venter *et al* describe science as having three characteristics or "components" that are constantly and dynamically interacting: abstraction, systemisation and reflection.<sup>134</sup> These three human capabilities are employed to explain reality in a "rational" manner. In the authors' view abstraction implies generalisation and the creation of categories, which leads to the need for systemisation. Abstraction also leads to creative cognitive functioning and the ability to cope with more complex tasks or situations.<sup>135</sup> Data that have been extracted from reality through abstraction must be systematically organised. This happens during the acquisition of knowledge, the verification of knowledge and the organisation of acquired and tested knowledge.<sup>136</sup> In the last instance reflection is the process of thinking and of thinking about thinking, which leads the scientist out of the domain of the specific disciplines and into the realm of philosophy, a step they regard as inevitable.<sup>137</sup> By using these criteria they distinguish between scientific and pre-scientific knowledge<sup>138</sup> as well as between legal practice and legal science.<sup>139</sup> They conclude that reality, viewed from the juridical perspective, is not comprehensively defined by either legal practice or legal theory (as a synonym for legal science).<sup>140</sup>

Writing independently, LM Du Plessis also states that theoretical knowledge displays these three characteristics: it is abstract knowledge, it is systematic and involves reflection.<sup>141</sup> Although theoretical knowledge of law cannot be empirically verified, as law itself is intangible, it is of the utmost importance as it is the map used to navigate the law. Due to its nature, theoretical knowledge is universal and not

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<sup>133</sup> Van Niekerk *Algemene Regsleer* 74-96.

<sup>134</sup> Venter *et al Regsnavoring* 8, 11. In Afrikaans, the language they wrote in: "abstraksie, sisteem/sistematiek en nadenke".

<sup>135</sup> Venter *et al Regsnavoring* 9-10.

<sup>136</sup> Venter *et al Regsnavoring* 10.

<sup>137</sup> Venter *et al Regsnavoring* 11.

<sup>138</sup> Venter *et al Regsnavoring* 15-18.

<sup>139</sup> Venter *et al Regsnavoring* 18-21.

<sup>140</sup> Venter *et al Regsnavoring* 21-22.

<sup>141</sup> Du Plessis *Inleiding tot die Reg* 1-5.

applied to individual situations.<sup>142</sup> Theoretical abstraction is conducted according to an intended plan or pattern. This is done by drawing distinctions, making classifications, creating classifications or describing distinctive criteria. Those who create theories also reflect upon their thought patterns and approaches.<sup>143</sup>

Swanepoel<sup>144</sup> uses the term "regswetenskap" as a given and it is not clear how or whether he distinguishes legal science from the law, although it can be deduced that he regards theorising of the law as legal science. In his opinion legal science should not be limited to the objective description of legal phenomena, but legal science is also normative and should establish the principles that determine the phenomena,<sup>145</sup> echoing Van Niekerk's thoughts.<sup>146</sup>

It is clear that "abstraction" is a constant ingredient in these South African legal philosophers' proposed view of science. However, no reference to the further development of Dooyeweerd's theory by Stafleu and Strauss is found in any of their works. In what follows, an attempt will be made to fill that gap.

Stafleu departs from but also refines the work of Dooyeweerd on demarcation and provides a complex yet convincing account of science as a human activity. For him, a philosophical theory on science breaks down into three basic and irreducible yet related facets.<sup>147</sup>

The first is that laws apply to knowing subjects (humans) and objects. Without laws, subjects and objects, there is no science.

Every science worth its name is concerned with laws. These laws are concerned either with more or less concrete things, events, signs, living beings, artefacts, social communities, etc., or with more or less abstract concepts, ideas, constructs, etc.<sup>148</sup>

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<sup>142</sup> Du Plessis *Inleiding tot die Reg* 2-3.

<sup>143</sup> Du Plessis *Inleiding tot die Reg* 4.

<sup>144</sup> Swanepoel 2007 *Regswetenskap en Regsfilosofie* 1-2.

<sup>145</sup> Swanepoel 2007 *Regswetenskap en Regsfilosofie* 24.

<sup>146</sup> Van Zyl, Van der Vyver, Du Plessis, Van Niekerk and Swanepoel were all at one time academics in the Faculty of Law at the then Potchefstroom University for Christian Higher Education, known at the time for its adherence to the reformed Christian philosophy of Dooyeweerd *et al.*

<sup>147</sup> Stafleu 1980 [http://www.freewebs.com/stafleu/stafleu\\_time\\_and\\_again\\_Ch1.pdf](http://www.freewebs.com/stafleu/stafleu_time_and_again_Ch1.pdf) 5-8.

<sup>148</sup> Stafleu 1980 [http://www.freewebs.com/stafleu/stafleu\\_time\\_and\\_again\\_Ch1.pdf](http://www.freewebs.com/stafleu/stafleu_time_and_again_Ch1.pdf) 6.

Without subjects, there can be no laws and without laws there cannot be subjects. Over-emphasis on the subject-side leads to irrationalism and over-emphasis on the law-side leads to rationalism. The subject/law distinction is an ontological matter, while "the primary aim of science is to render these laws explicit, ie to explicate them".<sup>149</sup> These *a priori* laws that exist independent of human intervention should be distinguished from human hypotheses, theories or models, which are epistemological in nature.<sup>150</sup> All knowledge of facts is theory-laden and there is an inescapable correlation between subject and law.<sup>151</sup>

Secondly he points out the link between typicality and modality. Typical laws apply to a certain class of subjects only and are "found by induction and generalization of empirical facts or lower-level law statements".<sup>152</sup> Modal laws are explanations or descriptions of a mode, apply universally and can be formulated only by means of abstraction,<sup>153</sup> ie rational processes are required. It is not only laws that can be distinguished as either typical or modal; the same holds true for subjects and objects. A particular wave may be typical, but the "wave packet" does not exist in the real sense of the word: it is an abstracted concept, yet exists nonetheless. Thus he regards abstraction as an aim of science. Abstraction can entail "the formulation of modal, universal laws", but it also includes "modal analysis of concrete reality on both the law side and the subject side".<sup>154</sup>

Science studies the relationship between subjects and objects in modal terms. The "reconstruction or synthesis of typical laws" is the next aim of science. This facet is characterised by abstraction and subsequent reconstruction as well as analysis and synthesis.<sup>155</sup>

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<sup>149</sup> Stafleu 1980 [http://www.freewebs.com/stafleu/stafleu\\_time\\_and\\_again\\_Ch1.pdf](http://www.freewebs.com/stafleu/stafleu_time_and_again_Ch1.pdf) 8.

<sup>150</sup> Stafleu 1980 [http://www.freewebs.com/stafleu/stafleu\\_time\\_and\\_again\\_Ch1.pdf](http://www.freewebs.com/stafleu/stafleu_time_and_again_Ch1.pdf) 9.

<sup>151</sup> Stafleu 1980 [http://www.freewebs.com/stafleu/stafleu\\_time\\_and\\_again\\_Ch1.pdf](http://www.freewebs.com/stafleu/stafleu_time_and_again_Ch1.pdf) 10.

<sup>152</sup> Stafleu 1980 [http://www.freewebs.com/stafleu/stafleu\\_time\\_and\\_again\\_Ch1.pdf](http://www.freewebs.com/stafleu/stafleu_time_and_again_Ch1.pdf) 12.

<sup>153</sup> Stafleu 1980 [http://www.freewebs.com/stafleu/stafleu\\_time\\_and\\_again\\_Ch1.pdf](http://www.freewebs.com/stafleu/stafleu_time_and_again_Ch1.pdf) 11-12.

<sup>154</sup> Stafleu 1980 [http://www.freewebs.com/stafleu/stafleu\\_time\\_and\\_again\\_Ch1.pdf](http://www.freewebs.com/stafleu/stafleu_time_and_again_Ch1.pdf) 12. Also see Stafleu 1981 *Philosophiae Reformata* 165-167.

<sup>155</sup> Stafleu 1980 [http://www.freewebs.com/stafleu/stafleu\\_time\\_and\\_again\\_Ch1.pdf](http://www.freewebs.com/stafleu/stafleu_time_and_again_Ch1.pdf) 13-14.

In the third instance he argues that a range of irreducible modal aspects exist. All modalities exist at once, intertwined and interrelated.<sup>156</sup> Science designates and distinguishes modal aspects and explores their retrocipations and anticipations, as described by Dooyeweerd.<sup>157</sup> "Science" occurs when modalities are "opened up", and that happens once they are recognised as principles of explanation and their retrocipations and anticipations are explored.<sup>158</sup> This is what Kuhn refers to as revolutionary science,<sup>159</sup> but Stafleu proposes the following reformulation of Kuhn's theory:

In the pre-paradigm phase, scientists are not yet aware of the meaning of their concepts. With the formation of the first paradigms, it is mainly the retrocipatory analogies of the modal aspects or typical structures that are discovered (this includes the search for objectivity...). Paradigm change is brought about by the discovery of either a new retrocipatory analogy or, even more spectacularly, by the discovery of an anticipatory analogy. Such discoveries are made possible by an increasing degree of abstraction and, simultaneously, the opening up of new typical structures, both theoretically and technically.<sup>160</sup>

The effect of this complex demarcation criterion is that a vast range of activities is recognised as scientific, but due to his focus on the natural sciences, it is uncertain if Stafleu himself regards disciplines other than those traditionally regarded as natural sciences as being scientific.<sup>161</sup> Nevertheless, abstraction remains a central feature of the demarcation criterion, followed by the formulation and construction of laws.

Strauss also distinguishes between concrete or entitary abstraction (which is not scientific) and modal abstraction (which is scientific).<sup>162</sup> Entitary abstraction is required for people to make sense of the world. Even children will abstract certain parts or features to identify a certain animal as a horse or a cow. By contrast, modal abstraction or analysis concerns the aspectual dimension of reality, as opposed to

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<sup>156</sup> Stafleu 1980 [http://www.freewebs.com/stafleu/stafleu\\_time\\_and\\_again\\_Ch1.pdf](http://www.freewebs.com/stafleu/stafleu_time_and_again_Ch1.pdf) 21.

<sup>157</sup> Stafleu 1980 [http://www.freewebs.com/stafleu/stafleu\\_time\\_and\\_again\\_Ch1.pdf](http://www.freewebs.com/stafleu/stafleu_time_and_again_Ch1.pdf) 18. The retrocipations and anticipations are analogies, links or connections between earlier or later modalities.

<sup>158</sup> Stafleu 1980 [http://www.freewebs.com/stafleu/stafleu\\_time\\_and\\_again\\_Ch1.pdf](http://www.freewebs.com/stafleu/stafleu_time_and_again_Ch1.pdf) 30 - conclusions on the law-side of reality can be verified on the subject-side.

<sup>159</sup> Stafleu 1980 [http://www.freewebs.com/stafleu/stafleu\\_time\\_and\\_again\\_Ch1.pdf](http://www.freewebs.com/stafleu/stafleu_time_and_again_Ch1.pdf) 23-24.

<sup>160</sup> Stafleu 1980 [http://www.freewebs.com/stafleu/stafleu\\_time\\_and\\_again\\_Ch1.pdf](http://www.freewebs.com/stafleu/stafleu_time_and_again_Ch1.pdf) 26-27.

<sup>161</sup> Coletto 2011 *Acta Academica* 55.

<sup>162</sup> Strauss 2001 *Journal for Christian Scholarship* 29-30.

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the entitary dimension. To rephrase: modal abstraction deals with the *how*, entitary abstraction deals with the *what*.<sup>163</sup> Strauss explains in his own words that

[m]odal abstraction entails theoretical analysis and *analysis* always proceeds on the basis of *similarities* and *differences*. It is aimed at the *identification* and *distinction* of data.<sup>164</sup>

Due to the nature of scientific thought, making distinctions and theoretical thinking will always involve more than one modality. A comparison or analogy is made "when what is similar is evinced in what is different".<sup>165</sup> Entitary abstraction is not scientific;<sup>166</sup> only modal abstraction focuses on one particular aspect (or a few, but not all) and will "provide access to the analysis of the structures of such entities".<sup>167</sup> In fact, the "only exclusive trait of a science is the specific modal aspect ... through which it observes the world".<sup>168</sup>

Strauss rejects verifiability as a demarcation criterion because trustworthiness is not a feature exclusive to science.<sup>169</sup> He similarly rejects method and the distinction between *knowing subject* and *studied object* as reliable demarcation criteria, as "method at most has the role of a servant" in science and because the "subject-object relation is common to non-scientific human experience as well".<sup>170</sup>

It can thus be concluded that abstraction is regarded by this group as the key element of science. With the concept of modal abstraction, these philosophers provide a demarcation criterion "of both simplicity and solidity",<sup>171</sup> but it cannot be stated that philosophy of science has now, after centuries, come up with one generally accepted view on what science is. It is interesting that the South African

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<sup>163</sup> Strauss 2001 *Journal for Christian Scholarship* 30. For him too (30-31), the special sciences are limited to the perspective of one or a few particular aspects of reality, whilst philosophy concerns the "foundational coherent interlacement among all aspects of reality". This idea is further developed in his major work, tellingly titled *Philosophy: Discipline of the Disciplines*.

<sup>164</sup> Strauss 2001 *Journal for Christian Scholarship* 31. Another example would be the typonomical classification of plants in biology on the one hand and a concept like growth as a modal function on the other, Strauss 2006 *Journal for Christian Scholarship* 69.

<sup>165</sup> Strauss 2006 *Journal for Christian Scholarship* 70.

<sup>166</sup> Strauss *Philosophy* 48.

<sup>167</sup> Strauss *Philosophy* 49.

<sup>168</sup> Coletto 2013 *TD* 9.

<sup>169</sup> Strauss *Philosophy* 46.

<sup>170</sup> Strauss *Philosophy* 47.

<sup>171</sup> Coletto 2011 *Acta Academica* 59.

legislator has provided such a definition in order to regulate the distribution of research funding and the stimulation of research. For the sake of completeness, Parliament's contribution to the debate will be considered next.

#### 4 Statutory provisions in South Africa

The National Research Foundation (NRF) is the principal public institution for funding and promoting scientific endeavours in South Africa.<sup>172</sup> In section 1 of the *National Research Foundation Act*<sup>173</sup> research, science and technology are defined as follows: "research" is the generation, preservation, augmentation and improvement of knowledge by means of scientific investigations and methods in the field of science and technology;

"science" includes any system of knowledge attained by verifiable means and the organised body of knowledge humans have gained by research;

"technology" includes indigenous technology, and means knowledge accumulated through research or observation, and the practical application thereof.<sup>174</sup>

The *Human Sciences Research Council Act*<sup>175</sup> defines human sciences as

... the investigation of human life and society through systematic, rational and verifiable methods that recognise the validity of both objective and subjective data.<sup>176</sup>

The definition of research in this Act is a verbatim repetition of the definition in the *National Research Foundation Act*.<sup>177</sup> There are no definitions of "scientific method",

<sup>172</sup> The *National Research Foundation Act* 23 of 1998 s 3 provides that its purpose is to "support and promote research through funding, human resource development and the provision of the necessary research facilities in order to facilitate the creation of knowledge, innovation and development in all fields of science and technology, including indigenous knowledge, and thereby to contribute to the improvement of the quality of life of all the people of the Republic".

<sup>173</sup> *Human Sciences Research Council Act* 23 of 1968.

<sup>174</sup> S 1 of the *National Research Foundation Act* 23 of 1998. Prior to the enactment of the present definition in 2001 (the previous definition of "science" was replaced by s 19 (f) of the *Science and Technology Laws Amendment Act* 16 of 2011) the definition of science followed a totally different approach. It read: "science' includes the natural sciences, engineering sciences, medical sciences, agricultural sciences, social sciences and humanities".

<sup>175</sup> *Human Sciences Research Council Act* 17 of 2008.

<sup>176</sup> *Human Sciences Research Council Act* 17 of 2008: section 1. Prior to 1990, the Afrikaans version of the *Human Sciences Research Act* 23 of 1968 included "regswetenskap" in the definition of human sciences, whereas the English version simply referred to "law". After the promulgation of the *Human Sciences Research Amendment Act* 99 of 1990, human sciences were broadly defined in s 1 as "those sciences concerned with the study of the creations and the manner of mental activity of man, human development, or mutual relationships, institutions or conditions in society". The entire *Human Sciences Research Act* 23 of 1968 was repealed in 2008 and replaced by the *Human Sciences Research Council Act* 17 of 2008.

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"scientific investigations", "verifiable means", "systematic, rational and verifiable methods", "objective data" or "subjective data" in either of these Acts.

The definitions of "research" and "science" in these Acts are linked to and reminiscent of the (philosophically abandoned) positivist approach, due to the references to a verifiable or scientific method. The lack of a definition of such a method is glaring. However, the notion that science is a body of knowledge accumulated by means of defined *activities* is repeated.

On its official website the Human Sciences Research Council states that it "conducts research that generates critical and independent knowledge relative to all aspects of human and social development" and lists a number of research areas, but none of these directly include law.<sup>178</sup> On its official website, where guidelines for research awards are provided, the NRF provides assistance and widens the scope of the activities that are regarded as "research" for its purposes:

For purposes of the NRF, research is original investigation undertaken to gain knowledge and/or enhance understanding.

Research specifically includes

- the creation and development of the intellectual infrastructure of subjects and disciplines (e.g., through dictionaries, scholarly editions, catalogues and contributions to major research databases);
- the invention or generation of ideas, images, performances and artefacts where these manifestly embody new or substantially developed insights; and
- building on existing knowledge to produce new or substantially improved materials, devices, products, policies or processes.
- It specifically excludes:
- routine testing and analysis of materials, components, instruments and processes, as distinct from the development of new analytical techniques; and

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<sup>177</sup> *National Research Foundation Act 23 of 1998*

<sup>178</sup> HSRC 2013 <http://www.hsrc.ac.za/en/research-outputs>. The research areas listed are: Democracy, Governance and Service Delivery; Economic Performance and Development; Education and Skills Development; HIV, AIDS, STIS and Tuberculosis; Human and Social Development; Population Health, Health Systems and Innovation; Centre for Science, Technology and Innovation Indicators.

- the development of teaching materials and teaching practices that do not embody substantial original enquiry.<sup>179</sup>

Legal academics receive funding from the NRF and are voluntarily graded according to the Foundation's criteria. The list of rated researchers recognised by the NRF includes more than 100 researchers who have "law" in one or other sense as their field of specialisation.<sup>180</sup> All of these researchers hold posts at universities or are retired academics.

However, the question remains whether or not law qualifies as a science for the purposes of the statutory definitions. It is not clear that law (or any other discipline for that matter) is a human science in terms of the current definition, as the definition is vague. Clarification of the terms "objective" and "subjective" (data) is required. In addition, the reference to "life and society" as the object that is studied or observed through the use of verifiable, rational, systematic methods does not contribute to denoting an activity as scientific. This could just as easily hold true for poetry, art, journalism or the making of financial investments.

Is the body of knowledge called "law" then a science as such? It can be accepted without any fear of contradiction that law is a system of knowledge and that it forms part of the organised body of knowledge humans have gained, but the question is whether this was achieved by means of "verifiable means" or through "generation, preservation, augmentation and improvement of knowledge by means of scientific investigations and methods in the field of science and technology".

These terms have not been judicially considered yet, but the definitions cannot be ignored or disregarded due to the mere fact that they do not conform to contemporary thinking, as they remain legally enforceable. However, it is submitted that the statutory provisions and philosophy of science can be usefully aligned to offer a workable demarcation criterion, even if limited to the South African context.

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<sup>179</sup> NRF 2014b [http://www.ul.ac.za/research/application/downloads/Assessment%20procedure%20for%20NRF%20Awards\\_February%202014.pdf](http://www.ul.ac.za/research/application/downloads/Assessment%20procedure%20for%20NRF%20Awards_February%202014.pdf) 3.

<sup>180</sup> NRF 2014a <http://www.nrf.ac.za/document/rated-researchers-pdf>, list published on 5 February 2014.

## 5 Suggested approach

It is proposed that the demarcation criterion proposed by Strauss and others, modal abstraction, can be used to constructively interpret the statutory definitions. According to the legislation, *research* is the *activity* that generates *scientific knowledge*. Modal abstraction as an intellectual mode of thinking described by Strauss *et al* can be regarded as an *activity* that develops "subjects and disciplines," that embodies "new or substantially developed insights" and builds on existing knowledge to substantially improve or create new "materials, devices, products, policies or processes". It is submitted that this will offer a useful and flexible standard whilst providing new meaning to the term "scientific method".

To summarise:

- (a) Scientific thinking, as an action, can be satisfactorily characterised by modal abstraction. It is theoretical, artificial thinking that identifies problems through the lens of a particular modality, in the present case the juridical.
- (b) Modal abstraction is used to provide (or suggest) answers to the problem at hand, by using analysis, analogies and synthesis. In other words, some original work is done or some development or refinement of theory is achieved. This activity has been labelled "research" by the legislature.
- (c) The body of work resulting from scientific thinking makes up the (special) scientific discipline, in this case "law", consisting of subjects, objects, norms and theories.

It is clear that "science" is the result of performing a defined activity. Even in his early published work, Strauss refers to law as a science,<sup>181</sup> but he readily acknowledges that not all activities within the legal field are scientific. He employs the example of a judge preparing a verdict. Although the verdict may be arrived at systematically, it does not necessarily amount to a "legal scientific treatise".<sup>182</sup> It seems as if an ontological shift has been made by philosophers of science, who

<sup>181</sup> Strauss *Wysbegeerte en Vakwetenskap* 59.

<sup>182</sup> Strauss *Philosophy* 46.

initially referred to science as a *thing* (eg "biology is a science") but who have recently defined science in terms of the type of *activities* performed by those involved. It follows that the various *activities* of those involved in the discipline of law in various capacities, as already referred to in sections 2 and 3 above, should be considered to ascertain if any of them qualifies as scientific, in order to answer the central question posed in this article.

## **6 (When) Are lawyers then practicing science?**

The term *lawyer* is used here as a generic description of any person who has received legal training and occupies him- or herself with the law. In South Africa the two legal professions, i.e. those of advocate and attorney, are regulated by statute, and strict professional codes apply.<sup>183</sup> However, a significant number of those who hold law degrees earn their living in different capacities that are just as essential in society and to the legal system. They include public prosecutors, legal advisers in state departments or commercial entities, magistrates, judges, mediators, members of tribunals or boards, and legal academics.

Divergent activities are at stake: the first encounter is normally when a student learns about (the theory of) law, which encounter is usually followed by a period of learning how to practice law (in whichever capacity, regardless of whether it is as an attorney, advocate, public prosecutor, legal adviser, state official or administrative officer). Then follows a period of actually applying the theoretical knowledge and practical skills acquired to solve problems or assist clients or the public (paying or not). Some start teaching or sharing what they know, whether it is theoretical knowledge or practical skills and knowledge gained from experience. When disputes are settled by courts of law, legal rules and principles are considered and applied by magistrates and judges. New legal rules are created when judges offer a new

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<sup>183</sup> The *Attorneys Act* 53 of 1979 and the *Admission of Advocates Act* 74 of 1964. Although the professions are due to be restructured, the *Legal Practice Bill* B20-2012 also contains provisions on the regulation of practitioners (Ch 3) and professional conduct (Ch 4). The bill is currently being debated in the National Assembly and has been in the making for over 10 years. For a history of and divergent views on the Bill see the entire *De Rebus* April 2013. Professional bodies do not shy away from disciplining and even excommunicating errant members. Examples abound. Recent incidents include *inter alia* *General Council of the Bar of South Africa v Geach* 2013 2 SA 52 (SCA); *Mda v Law Society of the Cape of Good Hope* 2012 1 SA 15 (SCA).

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interpretation or when a solution to a new problem is fashioned by applying existing principles in a novel way.<sup>184</sup>

In essence students are learning about the law and what law is. In Strauss's terms, they are acquainting themselves with the entities (rules, subjects, objects) within the juridical sphere. They are "learning to count using the abacus".<sup>185</sup> In South Africa, the importance of the possession of general academic and legal skills in this process is recognised, and all tertiary qualifications include both knowledge and skills outcomes.<sup>186</sup> Gradually students will start disregarding irrelevant detail and focus on the juridical aspect within a given situation, ie they will engage in theoretical thought. The skills gained will also be used to solve problems and formulate arguments. This is probably how the undergraduate student (or those doing their first legal degree) would function.<sup>187</sup> Once students identify and distinguish the characteristics of objects (persons, concrete situations) and laws (legal norms), they are entering the scientific arena, probably at master's level.<sup>188</sup>

The doctoral student, for whom the ability to "conceptualise new research initiatives and create new knowledge or practice" and "develop new methods, techniques, processes, systems or technologies in original, creative and innovative ways appropriate to specialised and complex contexts" are amongst the required competencies,<sup>189</sup> will definitely perform scientific work, as modal abstraction will be used to develop legal theory or refine current theory, thus adding to the body of legal knowledge.

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<sup>184</sup> In accordance with the doctrine of precedent (*stare decisis*), judgements on points of law by a High Court or court of higher stature will in principle be binding on courts within that jurisdiction.

<sup>185</sup> Strauss *Philosophy* 48.

<sup>186</sup> Campbell 2014 *Stell LR* 16-17, 19-21, 22-25, 29-30. The author provides a cogent exposition of the divergent demands of the organised legal professions and academia and concludes that the balance between theoretical and skills education is a matter that all law schools in the world grapple with in respect of their first or general legal qualifications. Legal qualifications up to LLB (NQF level 8) are general legal qualifications that prepare graduates for varied career paths.

<sup>187</sup> SAQA 2012 [http://www.saqa.org.za/docs/misc/2012/level\\_descriptors.pdf](http://www.saqa.org.za/docs/misc/2012/level_descriptors.pdf) Level Descriptors for NQF levels 5 to 8, 8-11.

<sup>188</sup> SAQA 2012 [http://www.saqa.org.za/docs/misc/2012/level\\_descriptors.pdf](http://www.saqa.org.za/docs/misc/2012/level_descriptors.pdf) Level Descriptor for NQF level 9, 11-12; Campbell 2014 *Stell LR* 21.

<sup>189</sup> SAQA 2012 [http://www.saqa.org.za/docs/misc/2012/level\\_descriptors.pdf](http://www.saqa.org.za/docs/misc/2012/level_descriptors.pdf) Level Descriptor for NQF level 10, 12.

The learning process is thus a continuum, starting from a position of pre-scientific thinking that is gradually developed into scientific thinking and then the culmination of such thinking in the creation of new knowledge, or the development of existing theory.

This process is facilitated by legal academics, who teach law, provide mentorship and undertake research in law.<sup>190</sup> Legal research is an activity mainly characterised by literature studies<sup>191</sup> on problematic issues and the formulation of proposed solutions to specific problems. Options are analysed, arguments are considered and the theoretically justified proposed solution is published as an article in an accredited journal, a book, a report or a conference paper. The "clients" who are served with the results of this research are members of a varied group comprising practising professionals, the judiciary, the state administration, fellow academics and those concerned with reforming the law or politics. These "clients" expect assistance from the legal academic to "perform their functions ... more efficiently or more effectively".<sup>192</sup> Their expectations are based on the "conviction that such research can be made beneficial to the administration of justice" in the sense that it can lead to law reform.<sup>193</sup> It can be stated that the task of an academic is that of a

...feedback mechanism[s] for error correction and truth propagation ... At a minimum, the legal academy points up logical or empirical flaws. At its best, this knowledge system provides both the grounds for understanding the (legal) world and the conditions for offering new and better ways of being in that world.<sup>194</sup>

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<sup>190</sup> Twining 1974 *Brit J L & Soc'y* 151. On 153 the author states: "...[t]o [academics in other disciplines] academic lawyers often appear to be some kind of hybrid technologist, concerned with an applied subject which hovers rather uneasily on the fringes of the worlds of the social sciences and the liberal humanities". It is a general phenomenon that academics may either be practice- or academically orientated (Campbell 2014 *Stell LR* 24), but this does not detract from the fact that universities require academics to teach and do research.

<sup>191</sup> Although other methods such as empirical studies are accepted and may also be used, literature studies (including comparative studies) are most prevalent. This assertion is based on the author's personal experience. No empirical or verifiable research on the extent of use of either research method has been published.

<sup>192</sup> Twining 1974 *Brit J L & Soc'y* 151. The author (on 151-152) notes that in the United Kingdom the needs of legal practice and commercial viability dictate choices on what is taught or published by legal academics, a matter that may well be the topic of a separate discussion.

<sup>193</sup> Cairns 1935 *Philosophy of Science* 485. The author incidentally argues that for this very reason, legal research amounts to a "technology" and will not be a science as long as this ideal prevails (Cairns 1935 *Philosophy of Science* 487-488).

<sup>194</sup> Woolman 2010 *SAPL* 527.

The task of the academic is to step back and suggest "how a body of law hangs together" or if it doesn't, why not. Woolman uses the apt image of academics offering "the intellectual scaffolding on which to build a better – a more just – legal system".<sup>195</sup> The role of the academic lawyer is limited in the creation of new law, but needed in the continuous dialogue between lawmakers, practitioners, academics and the public.<sup>196</sup> The legal academic plays a vital part in what he calls *theory building*, as academics may offer the courts critical reflection on the coherence of theories while not being constrained by time pressure, or the demands of clients, formal courtesy or collegiality.<sup>197</sup>

Smits states that the primary task of the legal academic is to answer the normative question of what law ought to be. Alternative outcomes may be suggested and may be viable, depending *inter alia* on the particular legal tradition.<sup>198</sup>

When a legal academic unlocks new knowledge or creatively re-exposes or reinterprets existing knowledge as described above,<sup>199</sup> the activity will be scientific, as it complies with the criteria of modal abstraction and the creation of new knowledge or the development of existing theory. It goes without saying that a mere summary of existing principles or a compilation of applicable rules will not be a scientific activity; a view supported by the legislature.<sup>200</sup>

The distinction between legal practice and legal science made by the authors Langdell, Van Warmelo and Du Plessis, as well as the South African courts and legislature,<sup>201</sup> may be justified with reference to the demarcation criterion proposed in section 5, but it is submitted that it cannot be stated that legal practitioners never engage in scientific activities. To state that the activity is not scientific when the practitioner is *doing* rather than *thinking* is an oversimplification.<sup>202</sup> Practitioners also

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<sup>195</sup> Woolman 2010 *SAPL* 527 fn 15.

<sup>196</sup> Woolman 2010 *SAPL* 521, 534, 539.

<sup>197</sup> Woolman 2010 *SAPL* 543.

<sup>198</sup> Smits 2014 *Critical Analysis of Law* 76, 82, 85-86; Smits "Redefining Normative Legal Science" 49-51, 54; Smits 2012 <http://elgarblog.wordpress.com/2012/08/15/what-do-legal-academics-do>.

<sup>199</sup> Du Plessis *Inleiding tot die Reg* 11.

<sup>200</sup> As discussed in s 4.

<sup>201</sup> As discussed in s 2.

<sup>202</sup> Venter *et al* *Regsnavoring* 19. Thinking is, after all, also a form of doing.

think about and reflect upon the personality traits of their clients and the particular strategy that should be adopted in a particular matter, but that does not amount to modal abstraction. The mere application of rules and principles learnt as a student and through experience will amount to entitary abstraction, not modal abstraction, and will not develop existing theory or add to the existing body of knowledge.

However, the legal system would have remained stagnant if not for those practitioners who actually rethink existing approaches (with or without the input of academics) and have the courage to convince their clients to pursue litigation in order to bring about legal reform, based on their proposed reinterpretation of existing rules and theory arrived at through modal abstraction. To state that legal practitioners are never practising science would be to disregard the undeniable impact the legal counsel of a Ms Carmichele<sup>203</sup> or Ms Fourie<sup>204</sup> had on the development of legal theory in South Africa.

Similarly, judicial officers will always engage in entitary abstraction during adjudication but will also engage in modal abstraction when a judgement is written, and will contribute towards the development of legal theory where a legal norm is reinterpreted or developed. all of these activities correspond with those Stafleu associates with the "opening up" of a modality.

The demarcation criterion proposed in section 5 can therefore be successfully utilised to analyse the activities of different categories of persons who are trained as lawyers.

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<sup>203</sup> *Carmichele v Minister of Safety and Security (Centre for Applied Legal Studies Intervening)* 2001 4 SA 938 (CC) changed the approach to the determination of state liability (and more particularly the test for unlawfulness) for omissions of its servants where citizens' fundamental rights are infringed. See Van der Walt 2003 *SAJHR* 517-540.

<sup>204</sup> *Fourie v Minister of Home Affairs* 2003 5 SA 301 (CC) reconsidered the common law rule that marriage is concluded between a man and a woman, which led to the legal recognition of same sex unions, see Schafer 2006 *SALJ* 626-647.

## 7 Conclusion

The analysis of South African legislation, jurisprudence and contemporary philosophy of science in this article has demonstrated that the type of *activity* a person is engaging in would be the determining factor to answer the question of whether or not law is science. The demarcation criterion proposed here, which is in essence an alignment of the criterion proposed by Strauss and others and the applicable statutory definitions, has been used to demonstrate that lawyers *may be* practising science, depending on the activity involved.

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## LIST OF ABBREVIATIONS

Am Phil Q	American Philosophical Quarterly
Brit J L & Soc'y	British Journal of Law and Society
Can J Philos	Canadian Journal of Philosophy
Cornell Int'l LJ	Cornell International Law Journal
HSRC	Human Sciences Research Council
JGPS	Journal for the General Philosophy of Science
JNGS	Journal for New Generation Sciences
PELJ	Potchefstroom Electronic Law Journal
SAJHR	South African Journal on Human Rights
SALJ	South African Law Journal
SAPL	South African Public Law
SAQA	South African Qualifications Authority
Stell LR	Stellenbosch Law Review
TD	Journal for Transdisciplinary Research in Southern Africa
U Ill L Rev	University of Illinois Law Review
Vt L Rev	Vermont Law Review

**IS LAW SCIENCE?**

MC Roos\*

**SUMMARY**

The question this contribution sets out to address is whether or not law can be regarded as a science. This notion is readily accepted by many, yet it is submitted that a proper theoretical justification for such an assumption is usually missing. The traditional primary sources of law, South African case law and legislation, distinguish between legal practice and legal science, but the basis of the distinction is not clear. However, an entire body of literature in the philosophy of science has developed around the question of when a discipline will amount to science. Various demarcation criteria proposed in the philosophy of science are considered. These include that science uses the scientific method, is susceptible to falsification, is puzzle-solving within a paradigm or renders beneficial results. None of these criteria offers a satisfactory solution to the problem. The proposition by a group of philosophers including Herman Dooyeweerd, Marinus Stafleu and DFM Strauss, that the answer to the demarcation question is to be found in modal abstraction, is then considered. Modal abstraction amounts to a consideration of reality (persons, things, theories and rules) from one or more defined point(s) of entry. It is an artificial and learnt manner of thinking as it approaches reality from the perspective of one of the modalities of being. For example, juridical abstraction would mean that a cow is considered as the object of someone's proprietary rights. An abstract idea of the cow's characteristics, from a juridical point of view, is formed and the rules of property law are applied. A number of South African legal philosophers, amongst others Van Zyl, Van der Vyver and LM du Plessis, have followed this approach. The South African legislature has also attempted to define the terms "science" and "research", mainly for funding purposes. These definitions are considered and the conclusion is that they do not provide the clear-cut answers one would expect. It will be argued that the nature of activities will determine whether an endeavour is scientific or not. The conclusion is that an alignment of the demarcation criterion

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developed by Strauss and others and the statutory definitions can provide a workable demarcation criterion. This "test" is then applied to the activities of law students, academics, practitioners and judicial officers to determine *when* they will be practising "science".

**KEYWORDS:** Law as science; philosophy of science; demarcation criteria; scientific nature of law