

Bond University

# Legal Education Review

---

Volume 33

Issue 1

---

2023

Computing Legal Analysis: A Guided Approach to Problem Solving in  
Contract Law

Marton Ribary  
University of London

Antony Starza-Allen  
University of Surrey

---

Follow this and additional works at: <https://ler.scholasticahq.com/>



This work is licensed under a [Creative Commons Attribution-Noncommercial-No Derivative Works 4.0 Licence](https://creativecommons.org/licenses/by-nc-nd/4.0/).

# COMPUTING LEGAL ANALYSIS: A GUIDED APPROACH TO PROBLEM SOLVING IN CONTRACT LAW

---

MARTON RIBARY\* AND ANTONY STARZA-ALLEN<sup>†</sup>

[T]he now-common assertion, recently repeated in the Carnegie Foundation report *Educating Lawyers*, that law professors should make explicit the analytical skills their students must learn ... [t]he traditional view holds that students are expected to acquire analytical skills by immersion, which can mean sink-or-swim. Students do learn that way, although not as quickly or efficiently as they could if what they were learning –rules of law– and how it was derived –legal analysis– was made clearer to them.<sup>1</sup>

## I INTRODUCTION

First-year undergraduate students in contract law often find the retention and application of legal doctrine a sink rather than a swim experience.<sup>2</sup> To help them swim, we encourage students to understand the common law as a semi-formal logical system of information that can be categorised, organised and reconstructed in legal problem solving. We believe that students need help with building confidence before they study the intricacies of a sophisticated doctrine. For this reason, we propose to provide students with a simple conceptual scaffolding as a pragmatic educational starting point to construct effective arguments without drowning in analytical complexity. In our experience teaching contract law as a first-year undergraduate module, this ‘information management’ approach enables students to navigate the complexity of the subject matter, acquire essential legal skills and knowledge, and build confidence when demonstrating learning outcomes. We provide a five-stage guided methodology, developed

---

\* Law and Criminology, Royal Holloway, University of London. Marton Ribary’s work was supported by The Leverhulme Trust (Grant no. ECF-2019-418).

<sup>†</sup> School of Law, University of Surrey

<sup>1</sup> Nelson P Miller and Bradley J Charles, ‘Meeting the Carnegie Report’s Challenge to Make Legal Analysis Explicit: Subsidiary Skills to the IRAC Framework’ (2009) 59(2) *Journal of Legal Education* 192, 192-193.

<sup>2</sup> One of the key observations of the Carnegie Report mentioned in the motto was that an ‘emphasis on the procedural and systematic gives a common tone to legal discourse that students are quick to notice, even if reproducing it consistently is often a major learning challenge’ (William M Sullivan et al, *Educating Lawyers: Preparation for the Profession of Law. Summary* (Jossey-Bass, 2007), 5). The Carnegie Report had a major impact on legal education in the US which was reflected in William M Sullivan, ‘After Ten Years: The Carnegie Report and Contemporary Legal Education’ (2018) 14(2) *University of St. Thomas Law Journal* 331.

from our teaching practice, and inspired by theories of computational modelling, through which students can identify and extract legal information from primary and secondary sources, organise and categorise legal information and concepts into structured frameworks, and apply these models to assist with legal issue identification, application, analysis, argument and advice.<sup>3</sup>

In this paper, we lay out our approach in five stages: how to read and take notes of case law with case profiles in stage one; how mind mapping helps to grasp the structure of legal doctrine in stage two; how to approach contract law problem questions with process maps and structured tables inspired by IRAC in stage three; how such maps and notes are developed into sound and sufficiently deep legal analysis during application in stage four; and, finally, how students are encouraged to use their creativity to achieve a well-structured and rhetorically appealing legal advice in stage five. In section III, we reflect on our approach in the context of educational challenges and propose solutions we find in current pedagogical literature.

Our solution originally stemmed from a recognition of the need to provide students studying contract law with sufficient scaffolding for each topic to assist with the acquisition, organisation, and retention of core doctrinal rules (knowledge), while providing opportunity and guidance in respect to problem solving and critical thinking (application). The approach was designed to meet the needs of a diverse range of abilities to assist first-year undergraduate students with meeting the foundation learning outcomes, while creating opportunities to excel and perform at a high level. To obtain the highest marks, students are expected to step up and break new ground. Instead of simply retaining and reproducing knowledge in predefined forms, students need to develop skills to analyse and process information critically and organise new knowledge in a way that allows effective application to new contexts. Assessment based on problem-solving demands strong analytic skills and the skilful construction of detailed legal arguments to transition successfully from level HE4 to HE5.

Continuous reflection on our teaching practice made us realise that we do not simply teach a law subject. We aim to enrich an undergraduate law degree with what Robert Kowalski, the grandfather of logic programming, calls ‘practical thinking’, effectively teaching them ‘how to think’.<sup>4</sup> Kowalski acknowledges that in lieu of a

---

<sup>3</sup> Our reference to analysis is intentionally broad to capture the application involved in providing effective legal advice and answering problem questions. It is not intended to refer to specific analytic methodologies or even formal legal reasoning. As an undergraduate teaching methodology, we seek to promote analytical freedom, creativity and engagement over an introduction to formal methodologies which may feature later in the degree.

<sup>4</sup> Robert Kowalski, *Computational Logic and Human Thinking: How to be Artificially Intelligent* (Cambridge University Press, 2011) 10. A Logic Programming (LP) code inherently distinguishes between rules and a knowledge base to which those rules apply and uses a layout which indicates their interaction. The most celebrated example in the legal domain is the LP rendering of the British Nationality Act 1981 in Marek Sergot et al, ‘Formalisation of the British Nationality Act’ (1986) 2(1) *International Review of Law, Computers and Technology* 40.

standalone undergraduate degree, practical thinking could be naturally incorporated in the teaching of disciplines such as English composition, management science or law. Computational logic applies the laws of logic and the principles of structured problem solving, which are key components of computer coding as well as the precursor to legal reasoning. In the context of an English undergraduate law degree, the skills and methods of ‘practical thinking’ could either be delivered in a first-year foundational module, incorporated into other first-year core modules, or both.

Kowalski’s ‘practical thinking’ is only one area of a wider field of research associated with computational law which promises to be a great resource for innovation in legal education. This makes good sense considering that our approach borrows ideas from a wide range of computational law techniques, such as semi-formal logical analysis, a ‘semantic web’ of concepts from which one could draw inferences, and a graph representation that visualises the structure of arguments. Computational thinking allows students to discern the logical progression between the initial categorisation of legal information, articulate and demystify the process of producing legal advice, and visualise the constitutive elements of a persuasive legal argument.

We seek to apply our interest in experimenting with modelling in legal reasoning to produce a pedagogical tool that can assist students with problem solving and developing higher-order analytical techniques. Our proposed approach provides scaffolding to organise a wide range of legal information and to construct basic concepts before they can be deconstructed when students have gained the confidence to think about them in the necessary complexity and sophistication. This approach is particularly relevant to a common law subject such as contract law where rules and principles arise with a characteristic urgency from the facts of the case. An understanding of the incremental development of common law and judicial reasoning are constitutive elements of legal analysis, loosely defined to cover problem solving and providing legal advice. These building blocks of legal analysis are creatively adopted and adapted to the changing circumstances of cases. We present our guided approach to problem solving in contract law in section II. Section III reflects and evaluates the approach against the backdrop of sector-wide challenges exacerbated by the Covid pandemic. We acknowledge that our approach is still a work in progress but one with promising early results worth building on.

## II OUR INSTRUCTIONAL GUIDANCE IN STAGES

### A *Stage One: Reading Case Law*

First-year students on foundational law subjects, such as contract law, often find the language and reasoning of case law alien and

perplexing.<sup>5</sup> One reason for this is the highly technical nature of legal English which is described by Dan Douglas as a:

[C]lassic example of the need for precise, specific purpose language [with] the arcane lexis, the convoluted syntax, the use of Latin terminology, and the interminable cross-references to previous law and cases in legal texts. Yet, legal language was purposefully developed and is used dynamically by members of the legal profession to the legal profession's demand for precision in language.<sup>6</sup>

As the quote touches upon, judge-made law creates an additional layer of difficulty in understanding the common law.<sup>7</sup> Students need to interpret the personal style of different judges in order to extract rules and principles, identify the ratio and obiter, and evaluate the judgment against common law's precedent principle of stare decisis.<sup>8</sup>

Law texts require, as Miller and Charles point out, 'a more analytic approach [which] include readiness, purpose, rereading, anchoring, evaluating, and hypothesizing'.<sup>9</sup> We do not expect first-year students to read case law like the Evening Standard newspaper or a Harry Potter novel, and we do not expect them to distil principles combing through hundreds of pages of case law. Instead of close and slow reading, we encourage students to read in a smart way by focusing on passages revolving around phrases that they have identified as key from their first engagement with the topic by lectures and textbook. We encourage them to read the textbook and case law side by side, referring back and forth to consolidate the structure and logic of the doctrine and to become familiar with its manifestation in case law.

The framework we adopted is a rethinking of the standard case briefing technique where students need to identify four aspects of the case: relevant facts, legal issue, judgment held, and juristic reasoning.<sup>10</sup>

---

<sup>5</sup> Legal English is foreign in almost equal measure to native and non-native students. While English for specific purposes (ESP) usually forms part of legal education in non-English speaking countries, law schools in England might underestimate the linguistic challenge posed by primary sources. For ESP, see Ausra Labokaite and David Saetre Ludvigsen, 'Legal English – What is the Point?' (2011) 19 *Kalbu Studijos / Studies About Languages* 5; Stepanka Bilova, 'Case Briefs in Legal English Classes' (2016) 45(1) *Studies in Logic, Grammar and Rhetoric* 7. For legal English for both native and non-native speakers of English, see the monographic treatment of the subject in Rupert Haigh, *Legal English* (Routledge, 3rd edition, 2012).

<sup>6</sup> Dan Douglas, *Assessing Languages for Specific Purposes* (Cambridge University Press, 2000) 7-8.

<sup>7</sup> This point is presented with counterarguments which play down the difference between civil and common law jurisdictions in Jill Northcott, 'Legal English' in Brian Paltridge and Sue Starfield (eds.), *The Handbook of English for Specific Purposes* (Wiley Blackwell, 2012), 213, 218.

<sup>8</sup> Kenneth Yin provides an excellent discussion of the ratio decidendi and stare decisis principles from an educational perspective in his 'The Re-Killing (Perhaps) of the Donoghue Gastropod - and Some Suggestions to Tinker with the First-Year Legal Education Curriculum' (2017) 10 *The Journal of the Australasian Law Teachers Association* 189.

<sup>9</sup> Miller and Charles (n 1), 196.

<sup>10</sup> The routine exercise in the American law school setting is described by Michael Makdisi and John Makdisi, *Introduction to the Study of Law: Cases and Materials* (Carolina Academic Press, 3rd edition, 2018). For a standard definition of a 'case

Where there is a standalone module dedicated for skills and methods (like ‘English Legal System’ at Royal Holloway), this basic framework could be reinforced in Contract Law. Where first-year core modules are responsible for delivering on skills and methods, it could be introduced in the context of Contract Law. In our framework, we asked students to complete a case profile in a highly structured form with the following fields: short title of the case, full (neutral) citation, URL of the judgment published online, keywords for areas of application, case memo, relevant facts, legal issue, judgment held, juristic reasoning (ratio), dissenting opinion (obiter), important quotes, and additional notes.<sup>11</sup> We effectively asked students to transform the unstructured textual data of case law into structured metadata. They were encouraged to read cases not as individual stories, but as combinations of legally relevant factors and dimensions.<sup>12</sup> Common factors and dimensions make cases similar to each other, while others give the opportunity to distinguish cases from each other. In this way, students look at contract law as a semi-formal system of categorised legal information that is constructed along multi-layered logical propositions in legal argument. This is a perspective we rely on when constructing legal arguments in stage four (subsection II.D). Even though students perform this exercise manually, it mirrors knowledge representation techniques such as semantic web and ontologies which were popular with legal AI researchers in the 2000s.<sup>13</sup>

---

brief’ and the four standard elements as part of a classroom exercise, see Bilova (n 5), 8 and 11.

- <sup>11</sup> Our list of fields in case briefing is similar to those suggested by Robin Creyke et al, *Laying Down the Law: An Ideal Introduction to Key Legal Concepts, Principles and Skills* (LexisNexis Butterworth, 11th edition, 2020), 179-181. The textbook also notes the affinity between case briefing and the IRAC methodology.
- <sup>12</sup> Legal case-based reasoning (LCBR) within AI and law has been focusing on such intermediate concepts between facts and high-level legal principles since the 1980s. Landmark projects in this area are HYPO as reported in Edwina L Rissland, and Kevin Ashley, ‘A Case-Based System for Trade Secrets Law’ in *Proceedings of the 1st International Conference on Artificial Intelligence and Law* (Association for Computing Machinery, 1987) 60; Kevin Ashley, *Modeling Legal Arguments: Reasoning With Cases and Hypotheticals* (MIT Press, with Edwina L Rissland and L Thorne McCarty, 1990); and the educational adaptation in the CATO computer tool as reported in Vincent Aleven and Kevin Ashley, ‘What Law Students Need to Know to Win’ in *Proceedings of the 4th International Conference on Artificial Intelligence and Law* (Association for Computing Machinery, 1993) 152; Vincent Aleven, ‘Using Background Knowledge in Case-Based Legal Reasoning: A Computational Model and an Intelligent Learning Environment’ (2003) 150(1) *Artificial Intelligence* 183.
- <sup>13</sup> Proceedings of two international conferences on this topic were collected in V Richard Benjamins et al (eds), *Law and the Semantic Web: Legal Ontologies, Methodologies, Legal Information Retrieval, and Applications* (Springer, 2005). The topic was revisited in a special issue of the *Semantic Web* journal introduced by Pompeu Casanovas et al, ‘Special Issue on the Semantic Web for the Legal Domain - Guest Editors’ Editorial: The Next Step’ (2016) 7(3) *Semantic Web Journal* 213. It is probably fair to say that such techniques have been since consolidated by for-profit publishers of case law. See Joost Breuker et al, ‘The Flood, the Channels and the Dykes: Managing Legal Information in a Globalized and Digital World’ in Joost Breuker et al (eds.), *Law, Ontologies and the Semantic Web: Channelling the Legal Information Flood* (IOS Press, 2008), 3; Kody Moodley et al, ‘The Case for a Linked Data Research Engine for Legal Scholars’ (2020) 11(1) *European Journal of Risk*

The first field of the structured form in our extended case brief is the short title of the case which makes students acquainted with the convention of referring to case law in shortened form. The full citation field makes them aware of the format in which cases are referenced in academic sources. Assigning keywords allows students to link judgments to a systematic doctrine. They are encouraged to use the doctrinal concepts they find in textbooks, but use them with caution and liberty, to organise doctrinal knowledge according to concepts they see fit. For the case memo field, students are challenged to summarise everything about the case in old-school Twitter tweet format, that is, in no more than 140 characters. We found that even if the produced case memo is not quite accurate, the challenge to squeeze as much information as possible into 140 characters makes students process the judgment in good analytical detail. What the case memo comes to be is almost irrelevant – the cognitive processing of the judgment while producing the case memo is what helps the knowledge stick.

The fields of facts, issue, held, and ratio follow a traditional structure of producing case briefs as discussed above. The final three fields of the form are optional in case students identify an important obiter in the judgment, want to record quotes which they may use in a legal advice or essay, and any additional notes they might have, for example, about the reception and afterlife of the judgment. We realise that the distinction between ratio and obiter, or even the identification of the ratio itself is not without problems,<sup>14</sup> but an attempt at identifying them is a worthwhile and pedagogically justified exercise.<sup>15</sup> In order to appreciate the distinction between binding and non-binding legal authority, the complexity of the precedent principle, and the organic development of a ‘system’ of common law, however inconsistent it may be, first-year undergraduate law students benefit from exercising with the somewhat sterile concepts of ratio and obiter.

Table 1 provides a simple example of a completed case profile on *Balfour v Balfour*<sup>16</sup> to give an idea about the exercise we practice with students in seminars.

---

*Regulation*, 70; Daniel Locke, ‘Methods for the Effective Retrieval of Case Law’ (PhD thesis, The University of Queensland, 2021).

<sup>14</sup> John Hynes Farrar noted in his *Legal Reasoning* (Lawbook, 2010), 112 that ‘clearly the whole conception of obiter dictum, involving the negation of ratio decidendi, is affected by the fuzziness of ratio.’

<sup>15</sup> See the discussion of ratio decidendi and obiter dicta and the corresponding exercise in identifying them in Creyke (n 11), 211-216.

<sup>16</sup> *Balfour v Balfour* [1919] 2 KB 571 (CA). Our example is similar to the one on *Warringah Properties Pty Ltd v Babji* [2006] NSWSC 702 in Creyke (n 11), 181-189.

**Table 1**  
**Example of a Completed Case Profile We Prepared with Students for**  
***Balfour v Balfour***

Short title	<i>Balfour v Balfour</i>
Full citation	<i>Balfour v Balfour</i> [1919] 2 KB 571 (CA)
URL	<a href="https://uk.westlaw.com/Document/I6E024170E42711DA8FC2A0F0355337E9/View/FullText.html">https://uk.westlaw.com/Document/I6E024170E42711DA8FC2A0F0355337E9/View/FullText.html</a>
Keywords	ITCLR, domestic agreement, rebuttable presumption
Case memo	No ITCLR when husband goes back on a promise to pay his wife £30 a month while away in Sri Lanka for work.
Facts	Mrs Balfour was medically advised to stay in England while her husband returned to his civil engineering post in Ceylon (Sri Lanka). Mr Balfour orally promised her wife £30 a month until she joined him in Ceylon. They later grew apart and Mr Balfour refused to keep up with the monthly payments. Mrs Balfour sued her husband to enforce the promise.
Issue	Has a contract been formed between Mr and Mrs Balfour?
Held	Overturning the decision at first instance, the Court of Appeal held that there was no enforceable agreement.
Ratio	The husband's promise was not supported by the wife's consideration and there was no intention to create legal relations, therefore, it was not possible to treat it as a contractually enforceable bargain.
Obiter	n/a
Quotes	'I am satisfied that there was no consideration moving from the wife to the husband.' (Duke LJ, 577-578) 'These two people never intended to make a bargain ... he promised to [pay], and was bound in honour ... The wife on the other hand ... made no bargain at all.' (Warrington LJ, 575) 'the arrangements which are made between husband and wife ... do not result in contracts at all ... because the parties did not intend that they should be attended by legal consequences' (Atkin LJ, 578-579)
Notes	<i>Balfour v Balfour</i> effectively created the doctrine of 'intention to create legal relations' which distinguishes between social/domestic and commercial settings.

We emphasise to students that the case profile is just one of many ways to engage with case law, that some of its concepts are sterile from which students may later need to move away as they start perceiving common law in its organic complexity. The technique should be accompanied with methods other modules and other tutors recommend. We present the extended case briefing method to students as a useful study tool that helps retain, systematise and reapply knowledge extracted from case law.



The reading and effective management of case law is a continuous activity required in all constituent topics of contract law. Throughout the year, we present cases in this structured manner in lectures and workshops, and we often start seminars by revisiting landmark cases with students as we complete a profile with them on the spot. We revisit and rewrite profiles of those cases which are relevant for multiple topics. For example, having discussed *Williams v Roffey*<sup>17</sup> under the topic of consideration supporting modification promises and the practical benefit rule, we have another look at the case when it comes up under the topic of economic duress later on in the year. Such examples demonstrate to students that cases are not compartmentalised and do not conform to a pre-existing doctrinal framework. It is quite the opposite. We may go as far as saying that unlike the complex reality of cases, the doctrinal framework is a cognitive construct. We present cases as precursive to doctrine, but we also acknowledge that pedagogically neither of them is a feasible starting point. We want students to realise that while cases are real, the doctrine is in the head, but we want to equip them first with cognitive confidence, a holistic and simple overview, or, to use a metaphor, a clear view of the sea so that they could navigate its waves.

### B *Stage Two: Mapping Contract Law Doctrine*

This paper does not seek to establish mapping as a novel method of teaching contract law but rather seeks to build on the organisation of legal information to assist with issue identification and to facilitate the construction of legal argument.<sup>18</sup> Mapping legal content is a well-documented revision and learning strategy popularised by Tony Buzan in the 1970s<sup>19</sup> and its use in education is supported by a vast amount of literature.<sup>20</sup> Most courses will present legal doctrine and the topics studied in contract law in a visual manner - using shapes, images or diagrams in lecture slides, handouts and other teaching materials to illustrate how cases fit together and to present complex ideas and concepts. Similarly, in our module, we used mapping as a core strategy from the outset and embedded the practice within the delivery of topics and seminar preparation. Using the dynamic presentation tool Prezi, diagrams, and free hand drawings, we provided guidance on 'mapping' legal information into structured frameworks upon which rules, principles and case names could be organised. Legal content was introduced in the lectures in structured frameworks that complemented mapping strategies, students then engaged with mapping in the

---

<sup>17</sup> *Williams v Roffey Bros and Nicholls (Contractors) Ltd* [1989] EWCA Civ 5.

<sup>18</sup> We use the term 'mapping' to cover a range of visual representation techniques. We do not advocate one version over another and we encourage students to find their own method of visualisation that works for them.

<sup>19</sup> Diane Murley, 'Technology for Everyone: Mind Mapping Complex Information' (2007) 99 *Law Library Journal* 175, 175.

<sup>20</sup> Francina Cantatore and Ian Stevens, 'Making Connections: Incorporating Visual Learning in Law Subjects Through Mind Mapping and Flowcharts' (2016) 22(1) *Canterbury Law Review* 153.

workshops and were tasked with producing their own maps for seminars.

A mind map can be loosely defined as a 'nonlinear visual outline of complex information'.<sup>21</sup> It typically takes the form of the core information placed at the centre with various subtopics on branches and sub-subtopics radiating further from each island. An alternative visual representation is a 'tree structure' with super- and subordinate parts.<sup>22</sup> Maps can also be understood as 'concept' maps - where the typical 'tree structure' representing primary, secondary or even tertiary order information visually demonstrates connections between new and existing concepts - or as 'argument' maps, where maps display the 'inferential structure of arguments and propositions'.<sup>23</sup> Similarly, maps can display information sequentially, demonstrating the logical progression of legal information - for example, where legal tests involve various steps or stages. Ultimately, mind maps can take various forms and we encourage students to develop a method that suits their individual learning style and needs.

To demonstrate mapping in contract law, students were encouraged to work with the workshop leader during a live workshop to create a coherent framework of the topic covered that week. Using the presentation tool Prezi,<sup>24</sup> students were shown how a basic outline of the relevant topics under contract formation can be filtered down to create a map for each topic, under which a process of identifying the relevant rules from case law (discussed above in stage one) from the textbook, course materials and also reading the cases. Figures 1, 2 and 3 show islands around the topic of contract formation we created with students in class. The presentation is comparable to Anne von der Lieth Gardner's augmented transition network (ATN) graph representation of contract formation<sup>25</sup>, but ours harnesses Prezi's three-dimensionality as we dynamically zoom from 'contract formation' via 'intention to create legal relations' to 'social/domestic setting'. We found that creating dynamic mind maps live with students in workshops and setting similar

---

<sup>21</sup> Murley (n 19) 175.

<sup>22</sup> Martin Davies, 'Concept Mapping, Mind Mapping and Argument Mapping: What are the Differences and do they Matter?' (2011) 62(3) *Higher Education* 279, 282.

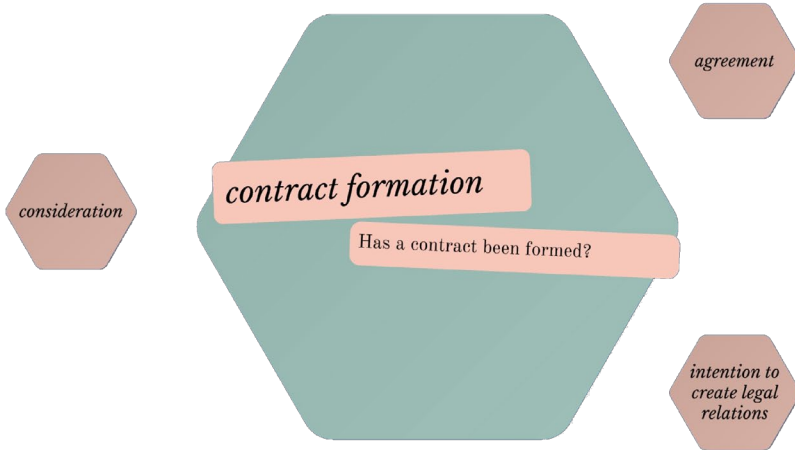
<sup>23</sup> Ibid 286.

<sup>24</sup> Prezi brings mind maps alive by animated navigation between layers. When we zoom in on a topic, we enrich the presentation with static and animated objects appropriate for both synchronous teaching sessions such as workshops and asynchronous teaching sessions such as podcasts. There is no overwhelming evidence that a Prezi presentation delivers a more persuasive or memorable message than PowerPoint (Pao-Nan Chou, Chi-Cheng and Pei-Fen Lu, 'Prezi Versus PowerPoint: the Effects of Varied Digital Presentation Tools on Students' Learning Performance' (2015) 91 *Computers and Education* 73; Samuel T Moulton, Selen Türkay and Stephen M Kosslyn, 'Does a Presentation's Medium Affect Its Message? PowerPoint, Prezi, and Oral Presentations' (2017) 12(7) *PLoS ONE* e0178774). However, the dynamic 'concept map' method of Prezi presentations suits the impromptu construction and delivery of mind maps much better than the static 'linear' method employed by PowerPoint presentations as described in Nirupama Narayanan, 'Powered by Prezi' (2017) 26(6) *The National Teaching and Learning Forum* 8.

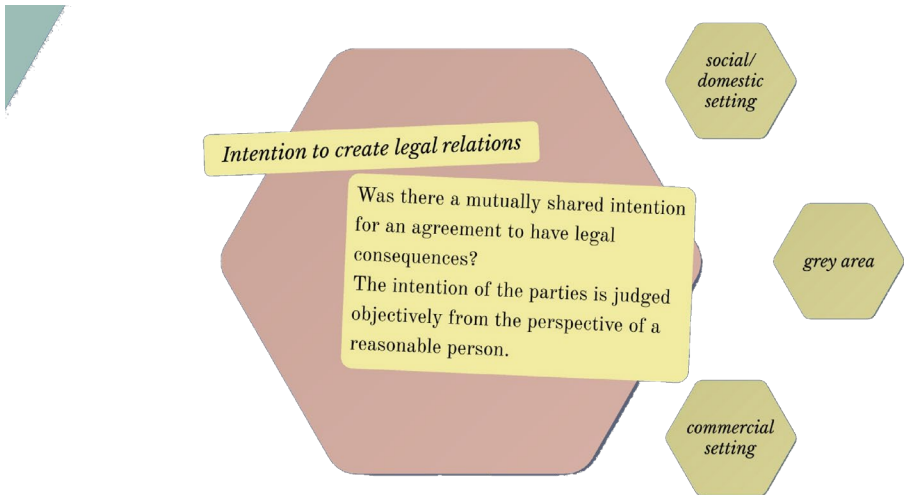
<sup>25</sup> Anne von der Lieth Gardner, *An Artificial Intelligence Approach to Legal Reasoning* (MIT Press, 1987); Kevin Ashley, *Artificial Intelligence and Legal Analytics: New Tools for Law Practice in the Digital Age* (Cambridge University Press, 2017), 19.

tasks in seminars emphasised the importance of the process of creating the mind maps themselves.

**Figure 1**  
**The Island of ‘Contract Formation’ Created with Students in Class Using Prezi**

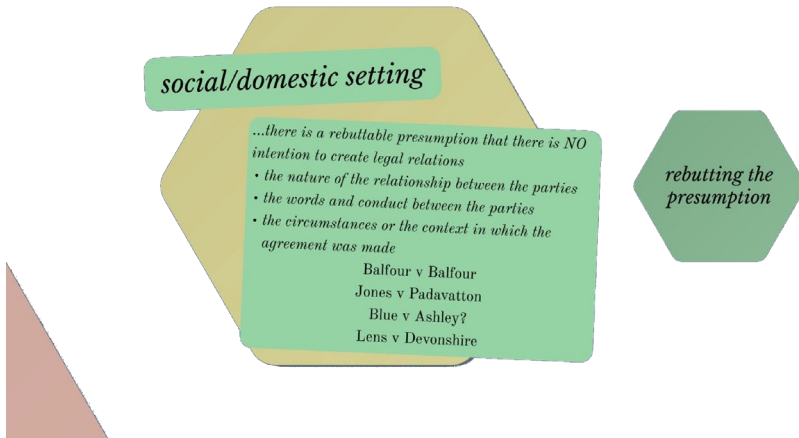


**Figure 2**  
**Zooming in on the Subordinate Island of ‘Intention to Create Legal Relations’ (ITCLR) with Prezi\***



\* The edge of the green ‘contract formation’ is still visible at top left corner.

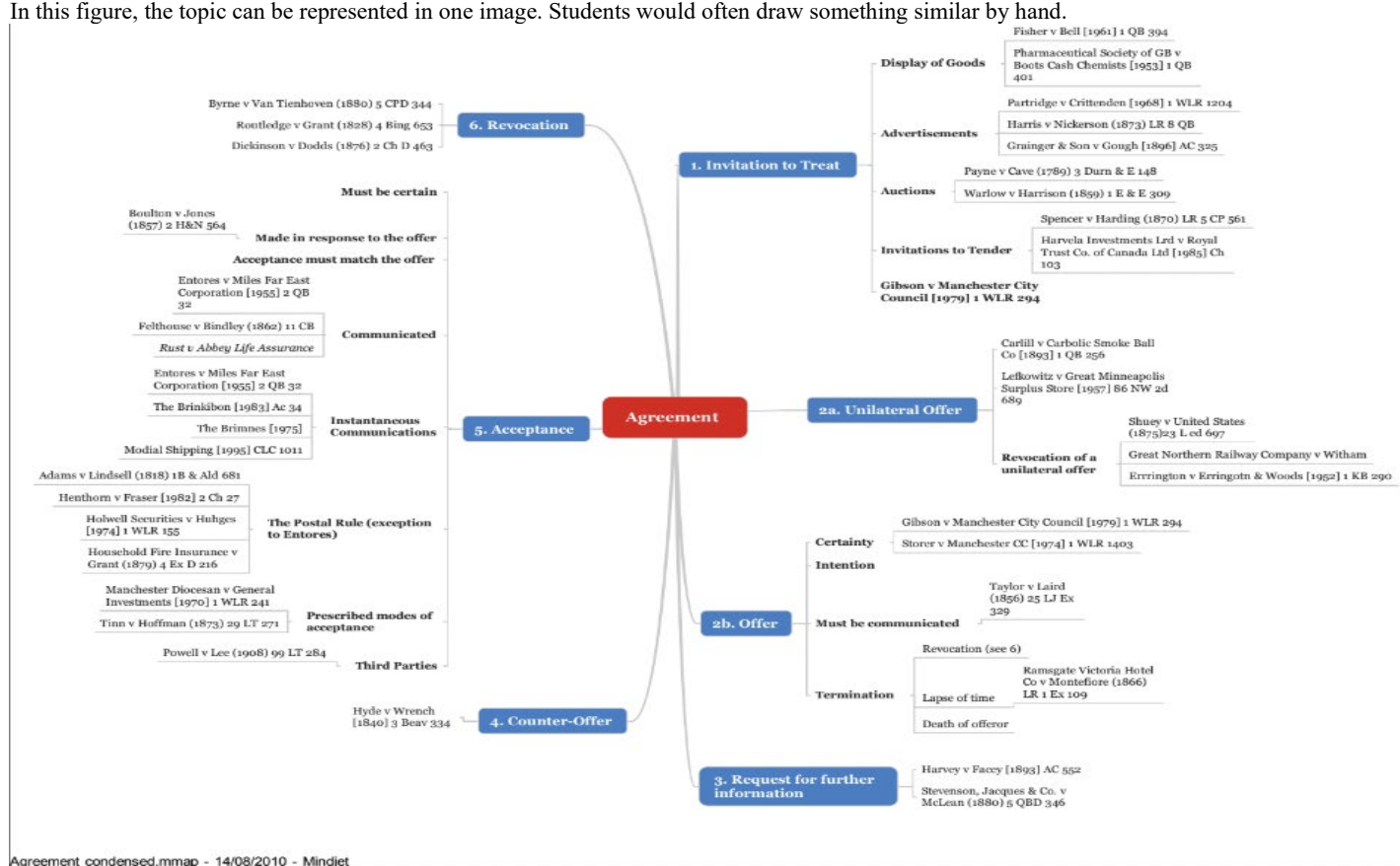
**Figure 3**  
**Zooming in Further on the Subordinate Island of ‘Social/Domestic Setting’\***



*\* The edge of the pink ITCLR island is still visible at the bottom left corner.*

We avoided simply giving students an end product. Beyond organising basic information, mind mapping helped students achieve a level of complexity in their acquisition of contract law knowledge that extended beyond the central provisions. Students were encouraged to organise specific or non-binding legal authorities by using multiple sub-islands. Figure 4 shows how a topic can be organised on one page.

**Figure 4**  
**An Example Using Different Mapping Software (Example Using Mindjet in 2010, Now Mindmanager).**  
 In this figure, the topic can be represented in one image. Students would often draw something similar by hand.



Our approach takes inspiration from and shows affinity with computational models of legal reasoning. For example, Gardner's pioneering program used an augmented transition network (ATN) which is, as Ashley explains, 'a graph structure that analyses problems involving sequences of events as a series of states and possible transitions from one state to the next'.<sup>26</sup>

In a similar fashion, IBM Debater produced an argument diagram with pro and con arguments hanging on a root node (which was the topic of violent video games), Daniel Oberle and his colleagues created norm graphs for the German Federal Data Protection Act, and Kevin Ashley's HYPO generated a claim lattice of precedent cases to support reasoning over an input fact situation.<sup>27</sup> Computational models and visual aids have also been popular with law teachers delivering key analytical skills to help students digest statutes and case law. Among others, Layman Allen and Rudy Engholm presented a flowchart in which section 354 of the US Internal Revenue Code had been reduced to propositional logic,<sup>28</sup> and building on the result of Ashley's HYPO, Vincent Alevén simplified case-based reasoning with dimensions and factors for educational purposes on the example of US cases related to the topic of trade secrets.<sup>29</sup>

The above examples from the field of AI and law indicate that visual representation is a powerful tool for laying bare the basic logical structure of law. While there is a risk of oversimplification with trying to map complex doctrines, our experience was that such exercises acted as a gateway to higher-level thinking. The mind maps we create with students in class can 'aid creativity, organization, productivity, and memory'.<sup>30</sup> Mapping not only allows students to draw and clarify links between concepts and organise information,<sup>31</sup> but it also facilitates the connection to new knowledge.<sup>32</sup> In this way, mapping enables students to acquire and consolidate core information upon which further research can create links to new information. Similarly, mapping helps students retain core information and takes the necessary first step towards developing 'higher order thinking'.<sup>33</sup> It is no surprise to observe that grasping the basics creates a gateway or platform for accessing more complex content. In our pedagogy, we understand mapping as securing confidence in the acquisition of core legal knowledge, forming the basis upon which further exploration – and interrogation – can successfully take place.

---

<sup>26</sup> Ashley (n 25), 19.

<sup>27</sup> See Figure 1.4, 2.6 and 3.4 in Ashley (n 25), 24, 59 and 87. Ashley reproduces these figures from a now inaccessible IBM video presentation reported in Daniel Oberle et al, 'Engineering Compliant Software: Advising Developers by Automating Legal Reasoning' (2012) 9(3) *SCRIPTed* 280; also in Ashley (n 12).

<sup>28</sup> Ashley (n 25), 40-44; Layman Allen and Rudy Engholm, 'Normalized Legal Drafting and the Query Method' (1977) 29(4) *Journal of Legal Education* 380.

<sup>29</sup> Ashley (n 25), 90-92; Alevén (n 12).

<sup>30</sup> Murley (n 19), 175.

<sup>31</sup> Cantatore and Stevens (n 20), 156.

<sup>32</sup> Davies (n 22), 285; Murley (n 19), 178.

<sup>33</sup> Cantatore and Stevens (n 20), 159.

Mind mapping, as an organising tool that promotes the acquisition of knowledge, is therefore particularly relevant to contract law as a common law body of developing, changing, often amorphous and sometimes contradictory, complex, multi-layered mass of rules, principles, policies and overarching theories. As Cantatore and Stevens recognise, 'law subjects in particular lend themselves to mind mapping due to the nature of the material, which often involves a central problem or piece/s of legislation, various case precedents and conflicting interpretations'.<sup>34</sup> Contract law, as a body of common law rules, often presents a significant challenge to students owing to the breadth and complexity of learning, but mapping is an effective learning strategy. Furthermore, mapping in contract law not only promotes the retention of legal information but also helps represent a holistic view of contract law doctrine. While the more confident and sophisticated student will find this holistic view contestable, one in need to be deconstructed, it is pedagogically justified to offer this view to those students who are just starting to find their feet in a new subject and a new mode of thinking.

Mapping techniques that categorise, position, trace and track legal principles present not only a method of ascertaining what must be learned but visually capture the doctrine as, for better or worse, a semi-coherent whole. The ability to sketch topics and the resulting visual product is fundamental to the claim of structural integrity in common law doctrine and necessary for students to understand contract law doctrine as a body of rules. Presenting 'the whole' as a starting point is not the only way to approach teaching contract law, however. Instead, one could start with a close examination of legal principles, for example, a reading of *Carlill v Carbolic Smoke Ball* to introduce students to the rules of offer and acceptance or the formulation of unilateral contracts and then extrapolate outwards to understand the doctrine of offer and acceptance as a whole. In our experience, the scaffolding afforded by a simplistic mapping framework better orientates students enabling them to grasp legal rules in their doctrinal context thereby reducing the difficulty associated with learning abstract legal principles. At an introductory level, mind mapping allows students to organise the essential elements of each topic in a legal contextual manner that improves rather than reduces complexity.

In addition to the charge of oversimplification, another related criticism of mapping methodologies we have grappled with is how and where to accommodate anomalous rules. Taking these limitations together, the visual presentation of contract law doctrine risks reducing critical appreciation. How can a map represent a doctrine where there is always a tension between coherence and inconsistency, the general rules and the anomalous? To attempt to do so makes presenting the doctrine as a coherent whole inherently misleading.

In Figure 1, we included a 'grey area' in which cases that resist compartmentalisation can be included. Alternatively, students might seek to capture differentiation in their maps using different colours or

---

separate diagrams. In this way, mapping can be used to consolidate complex knowledge rather than limit it.

The use of dynamic frameworks is also consistent with the message we are communicating, that is, while formal analysis of law is crucial, legal knowledge cannot be reduced to a computable deductive system. The reason for that is twofold: first, law is a social science that reflects changes in societal and cultural norms, and second, law has a normative purpose inasmuch as it prescribes future behaviour while adhering to the consistency principle encapsulated in the *stare decisis*. Even if we were able to reduce human behaviour to machine-processable data, machine learning could only provide a statistical approximation of current norms. It would spectacularly fail with those outlier fact patterns of landmark cases which produce turns in the law. Similarly, even if we were able to build a black box computer model of legal norms that gives the correct answer to any legal problem we may have, it would fail to explain the answer and hence persuade us to behave in a certain way in the future. As Ashley writes about the pioneering IBM programs Watson and Debater, '[t]hey may be able to answer legal questions in a superficial sense, but they cannot explain their answers or make legal arguments'.<sup>35</sup>

Overall, the mapping technique provides students with the conceptual tools to start viewing contract law doctrine not only as a sum of its parts, but to identify legal principles as constitutive information and understand how the connection or 'construction' of this information takes place and why it matters. Such a way of thinking about contract law was central to our 'information management' approach and the creativity of construction that comes with legal analysis and argumentation in later stages of our methodology. It lays the foundation for contesting legal rules, critical analysis and complex legal reasoning by securing students with the knowledge and frameworks through which higher-level engagement can be achieved. The next two stages are designed to develop students' reasoning power.

### C *Stage Three: Approaching a Problem Question*

Our guided approach to contract law revolves around problem solving. The approach encourages an active engagement with the subject where students are expected to apply their understanding of contract law to fictional problem scenarios. Traditionally, law teachers have encouraged students to follow the IRAC (issue-rule-application-conclusion) approach, 'an unequivocal method for case analysis [by which] students recognize a legal issue from the facts in the case and then analyse the facts according to a legal precedent and reach a conclusion'.<sup>36</sup> The approach is appropriate for discussing minor as well as for overarching legal issues, but in our experience, it may result in mechanistic answers which are tedious to write and tedious to read. We

---

<sup>35</sup> Ashley (n 25), 3.

<sup>36</sup> Marie Bittner, 'The IRAC Method of Case Study Analysis' (1990) 81(5) *Social Studies* 227, 227.



agree with Kenneth Yin and Carmela De Maio who argue that ‘the formalistic variant of IRAC is not suitable for the acquisition of legal reasoning skills’, and what is needed instead is ‘a model underpinned by legal syllogism’.<sup>37</sup> However, in our experience the limitations of IRAC is that it can constrain creativity and encourages students to adopt an overly simplistic and linear impression of the ‘rule - application’ stage.

At the very start of a first-year undergraduate law degree, following the IRAC approach slavishly may also fail to distinguish between obvious and contentious issues, those which simply need to be mentioned and those which need a closer look with additional case law, non-binding authorities, judicial commentary and academic sources. There is a certain danger of using what Miller and Charles call ‘the oversimplified IRAC framework’ which needs to be supplemented by ‘subsidiary skills [that] help them [the students] become self-learning, competent lawyers and citizens for life’.<sup>38</sup> Like Miller and Charles, we do not advocate for abandoning IRAC but ask students to see the proposed variation of it as a study tool that makes the steps of legal problem solving explicit and guarantees that all grounds are covered when preparing notes for legal advice.

Crucially, we demonstrated that mind maps could be used to create outlines of an answer to a problem question by providing a structured approach to the identification of the full range of relevant legal issues and rules. The application of mind maps to law assessments is well documented, including writing legal structures<sup>39</sup> and their use as an analytical framework to approach a complex document.<sup>40</sup> Importantly, mapping allows students to approach such tasks in a structured manner while also retaining the space for students to think creatively.<sup>41</sup> Rather than providing the ‘answer’, the mind map allows students to create an initial plan of a PQ and to then further refine and improve their answer with reference back to the frameworks created.<sup>42</sup>

We encourage students to initially approach problem solving using the multi-level mind maps they built in stage two to help identify relevant legal issues, relevant case law and to also spot opportunities for counter argument or different perspectives. For example, information presented in Figures 1, 2, and 3 above as applied to the topic of intention to create legal relations can help students to identify

---

<sup>37</sup> Kenneth Yin and Carmela De Maio, ‘Transformative, Troublesome and Liminal: Does the Presentation of Legal Reasoning in the Legal Studies Curricula in Higher Education Institutions Satisfy the Characteristics of a Threshold Concept?’ (2023) 57(1) *The Law Teacher* 1, 1.

<sup>38</sup> Miller and Charles (n 1), 193. Arguing that ‘IRAC is not enough’, Bret Rappaport suggests that one such subsidiary skill is ‘storytelling’ (Bret Rappaport, ‘Tapping the Human Adaptive Origins of Storytelling by Requiring Legal Writing Students to Read a Novel in Order to Appreciate how Character, Setting, Plot, Theme, and Tone (CSPTT) are as Important as IRAC’ (2008) 25(2) *Thomas M. Cooley Law Review* 267, 269-270).

<sup>39</sup> Cantatore and Stevens (n 20), 159.

<sup>40</sup> Murley (n 19), 179.

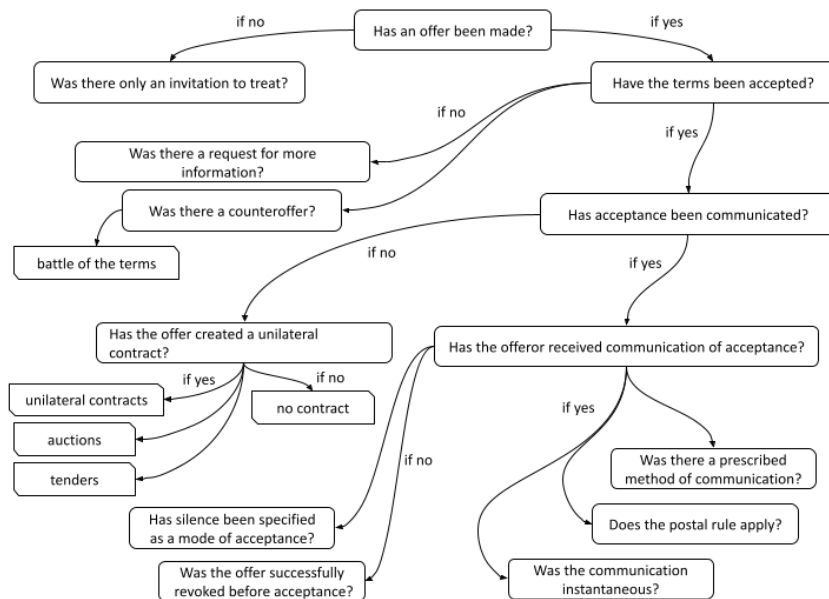
<sup>41</sup> Cantatore and Stevens (n 20), 157.

<sup>42</sup> Murley (n 19), 180.

the central presumption, specify its application in relation to other cases, identify potential rebuttals and - if also represented in the map as a separate island - alternative approaches to establishing intention to create legal relations, such as the contextual approach seen in *Edmonds v Lawson* [2000] QB 501. Taking this further, one simple question at the crossroads of the map could help selecting the correct island/s at the same level or moving to another level. For example, an offer and acceptance analysis could be effectively translated to a decision tree as shown in Figure 5. However, just as we do not provide ready-made mind maps, we also do not provide such sequential process maps to students. The cognitive processing of the subject matter which is required for creating these maps and diagrams is what we want to encourage.

**Figure 5**

**A Sequential Process Map (Decision Tree) Created with Students from a Mind Map Related to the Rules of Offer and Acceptance**



We bridge the gap between legal doctrine and problem solving with a hands-on exercise in workshops and seminars. We ask students to highlight parts of text in the problem scenario which they think are legally relevant. We advise them to be economical so that the highlighted parts are as short as possible. At this point we ask students to take notes in a table where the four column heads are inspired by elements of the IRAC approach: fact, legal issue, case law, and rule. The highlighted parts of text go in the cells of the 'fact' column as word-by-word quotations (the evidence) which are then matched with the legal issue they expose, the relevant case(s), and the rule applicable to the issue extracted from the case(s). Finally, we ask students to link the

‘rule’ back to the ‘fact’ as a first attempt at application which is the core skill to develop with problem solving.

For example, one of the quickfire problem scenarios we use in seminars as a warm-up exercise is shown in Table 2. The scenario is part of a set about the rules of offer and acceptance in which we look at the ways acceptance of an offer can be communicated. In the example, we look at offer (1) and acceptance (2A) first before addressing the issue of communicating acceptance with the receipt rule as the general rule (2B) and the postal rule (2Bi and 2Bii) as its exception, and the rule of fault displacing the postal rule (2Biii).

**Table 2**  
**Example of the tabular note-taking approach to a warm-up problem question about offer and acceptance with the postal rule**

Ingrid emails Jules offering to sell a consignment of woolly jumpers for £1,000. Jules posts her acceptance to Ingrid but her letter does not arrive for a week because it has been misaddressed.			
Fact	Legal issue	Case law	Rule
‘Ingrid emails Jules’	Is the communication an offer? (1)	<i>Gibson v Manchester</i> <sup>43</sup> and <i>Partridge v Crittenden</i> <sup>44</sup>	An offer must be sufficiently certain and made with an intention to be bound
to the fact		key terms are clear which suggests an offer which is capable of being accepted	
		apply rule	
‘Jules posts her acceptance’	Is the communication an acceptance? (2A)	<i>Hyde v Wrench</i> <sup>45</sup>	A valid acceptance must match the offer
to the fact		communication in response to the terms of the offer is unequivocal, hence there is acceptance subject to successful communication	
		apply rule	
‘Jules posts her acceptance’	Is the communication an acceptance? (2B)	<i>Entores</i> <sup>46</sup>	Receipt rule: acceptance must be communicated and received to be effective
to the fact		acceptance upon receipt of the email	
		apply rule	
‘Jules posts her acceptance’	Does the postal rule apply? (2Bi)	<i>Adams v Lindsell</i> <sup>47</sup>	Postal rule (exception): deemed effective on posting
to the fact		if the postal rule applies, then the contract was formed upon sending the letter	
		apply rule	
‘her letter does not arrive’	Does the postal rule apply? (2Bii)	<i>Henthorn v Fraser</i> <sup>48</sup>	Communicating by post must be in the reasonable contemplation by both parties

<sup>43</sup> *Gibson v Manchester City Council* [1979] 1 WLR 294 (HL).

<sup>44</sup> *Partridge v Crittenden* [1968] 1 WLR 1204 (QB).

<sup>45</sup> *Hyde v Wrench* (1840) 3 Beavan 334.

<sup>46</sup> *Entores Ltd v Miles Far East Corporation* [1955] EWCA Civ 3.

<sup>47</sup> *Adams v Lindsell* (1818) 1 B and Ald 681.

<sup>48</sup> *Henthorn v Fraser* [1892] 2 Ch 27 (CA).

to the fact	post as a means of communication is unlikely to be in the reasonable contemplation of both parties, and hence the postal rule is unlikely to apply		apply rule
'misaddressed'	Does the postal rule apply? (2Biii)	<i>Household Fire</i> <sup>49</sup>	Rule of fault: postal rule displaced for the receipt rule
to the fact	in case communicating by post is reasonable, posting may be effective even if the letter does not arrive - but here it is the fault of the sender and hence the postal rule is displaced		apply rule

Students could, for example, highlight that 'Ingrid emails Jules' in the 'fact' cell, and ask in the 'legal issue' cell whether the expected mode of response is instantaneous. Note that the question we put in the 'legal issue' cell largely corresponds with one of the elements of the sequential process map in Figure 5. By consulting the topic's mind map itself, students will then identify in the 'case law' cell that *Entores* is one of the cases relevant to this issue and note in the 'rule' cell that according to the ground receipt rule, acceptance must be communicated and received to be effective. Focusing on this row of the table only, students would then apply the rule to the facts and say that if the bargain is fully conducted by email, then Jules would accept Ingrid's offer at the moment Ingrid receives the email from Jules. The answer at this point focuses on one isolated element of the problem scenario, and for this reason, it is preliminary, and it will be eventually dismissed when more elements are considered.

We encourage students to break down their analysis to the smallest possible building blocks when they take notes in the cells of the table. We also emphasise that they could start populating rows from any cell they see fit. Sometimes it is not immediately obvious what should be quoted from the text of the problem scenario, even though the scenario as a whole creates a strong impression that a given legal issue applies. Once students are satisfied that they have recorded all relevant information, they are asked to create an outline of advice from the building blocks they created in the rows of the table. They may also want to transpose these building blocks to the mind maps and process maps of the given topic. Students are reminded that taking notes in a structured manner and transposing them on the maps are reasoning tools. There is no template or recipe for legal advice which, as the end product of their problem solving exercise, has to be carefully customised, a point we address in stage four below. While our approach is commensurate with the standard IRAC approach, our experience shows that it produces deeper and better written legal advice.

#### D Stage Four: Constructing Legal Advice

Our primary contribution in this methodology seeks to capitalise on the organisation of legal information above in such a way that promotes

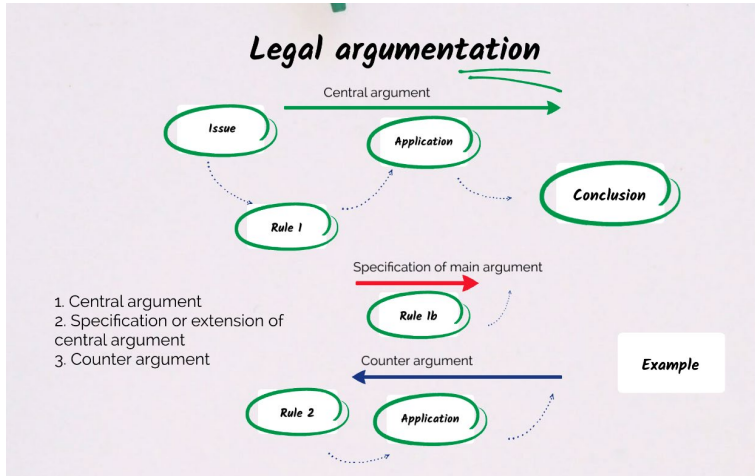
<sup>49</sup> *Household Fire Insurance v Grant* [1879] 4 Ex D 216.

the construction of complex legal analysis and argument that supports effective problem solving and writing legal advice. One of the key learning outcomes of law assessments concerns problem question answering including the construction of arguments taking the form of legal advice. The successful demonstration of this learning outcome is one of the primary markers of high-level work. Our approach builds on the previous guidance on mapping and creating outlines to exemplify how students can visualise the construction of legal arguments and advice by utilising the informational ‘building blocks’ previously organised and categorised through case notes, maps and outlines. At this very early stage of an undergraduate law degree, we purposely avoid the complexity of deductive and inductive reasoning techniques in favour of a more simplistic, holistic, but pedagogically justified reasoning approach to constructing legal advice. The mapping techniques discussed previously encourage students to rely on a wider range of information to support their responses to legal issues. Rather than relying on the simplistic application of ‘a rule’ to the issue, students can make use of their frameworks to locate additional legal information including extensions to the rule, exceptions or relevant supporting judicial commentary.

Using Prezi, we encouraged students to think of their advice as constituting not only the application of key legal rules, but their specification and distinction using arguments and counterarguments. Furthermore, students were shown how the constitutive information in a piece of legal advice included primary legal rules (ratio) of case law and judicial commentary in support as well as obiter remarks. The use of both binding and non-binding authority was encouraged to produce a sophisticated piece of legal advice.

Students were initially guided in the abstract with a visual representation of a complex legal argument or aspect of advice, adapting the classic IRAC approach to show a level of complexity at the rule / application stage.

**Figure 6**  
**An Example of a Legal Argument Diagram Provided to Students During a Live Prezi Online Workshop**



Students were then shown how a piece of ‘simple’ legal advice might look following the extension of a central argument and use of counterargument.

**Figure 7**  
**An Example Given to the Students During an Online Workshop of How Legal Analysis Could Be Constructed Using the Categories in the Legal Argument Diagram**

[The issue...]. [Rule 1 in case] where [judge] stated...[rule statement], it can be argued that [application], then [outcome 1]. This is further supported by [case 2] which decided that [rule 1b]...However, in [case 3] it was held that [rule 2 - application, outcome 2]. The likely outcome is [conclusion].

Having demonstrated the constitutive parts of a legal argument, students were shown an example of how visualisation might appear through the application of legal doctrine. Using the topic of agreement, students were shown what might be considered a ‘simple’ example of an IRAC-based advice.

**Figure 8**  
**An Example of a ‘Simple’ IRAC-Based Advice**

The issue to be determined is whether A’s acceptance by post is valid and if so when is it effective? Following **Adams v Lindsell**, acceptance is deemed to take place when it is posted. As in Adams, although the acceptance is delayed, the court will likely hold it was effective on posting and not when it was received following the delay.

Students were then shown what might be produced having considered the use of extension, specification and counterargument, with colour codes used for each stage.

**Figure 9**  
**An Example of an IRAC-Based Advice Developed Using Categories in the Legal Argument Diagram**

The issue to be determined is whether A’s acceptance by post is valid and if so when is it effective? According to Denning LJ in **Entores**, a contract is formed when the acceptance has been received. However, an exception may apply to communication by post where, following **Adams v Lindsell**, acceptance is deemed to take place when it is posted. As in *Adams*, although the acceptance is delayed, the court may hold it was effective on posting. For this ‘postal rule’ to apply, it must be ‘within the contemplation of the parties’ that the acceptance would be made by post (**Henthorn v Fraser**, Lord Herschell). Similarly to *Henthorn*, here the offer was made by post and so it can be argued that acceptance by post would be expected by a reasonable person. However, the postal rule can be displaced if the offeror stipulates that they require ‘actual communication’ (**Holwell Securities**, Russell LJ). As in *Holwell*, in this case the offeror has requested ‘notice in writing’. Therefore it is most likely the postal rule would be displaced, the general rule requiring receipt in **Entores** applies and the acceptance is only effective once it is received following the delay.

The example above demonstrates how a range of legal information can be organised into the primary argument (blue), the refinement or specification of the primary argument (green) and the use of counterargument (red). Here, we refer to *Entores* as authority for the ‘receipt rule’ which we present to students as a starting point (or predetermined ‘anchor’) to their analysis of a legal issue raised by the communication of an acceptance. By doing so, the resulting advice demonstrates some complexity and considers the issue at hand from a variety of perspectives to support a more nuanced and persuasive outcome. Contract law, as a body of common law rules, is particularly suited to this ‘information management’ approach as legal principles can be described using taxonomical observations, their development is understood through judicial refinement, and their application is a product of many constitutive elements. The ability to identify these

principles and discern their development from case law to their application, clarifies and distinguishes their existence and allows for a more complex response to a legal issue. The examples given to students during the workshops allowed them to visualise the analysis of legal issues at a high level of detail.

Following the approach to reading cases at stage one and the mapping of legal information at stage two, students are encouraged to understand contract law doctrine as a combination of legally relevant factors and dimensions. Here in stage four, we encourage students to view the engagement with issues outlined in stage three as a product of a semi-formal system of common and distinguishing dimensions which are deployed along multi-layered logical propositions. In practice, we ask students to arrange factors and dimensions and the cases which feature them in a dialectical framework to build detailed and persuasive arguments.

The successful construction of these analytical frameworks is reflective of information management approaches in legal case-based reasoning (LCBR) within AI and law. One prominent example, the HYPO legal expert system of American trade secret law by Edwina Rissland and Kevin Ashley<sup>50</sup> evaluated new cases according to legally relevant dimensions identified in thirty previous cases related to American trade secret law and identified thirteen dimensions in various combinations in them. The dimensions were expressed as factual predicates to create a link between abstract ideas of law and the particular facts of a case. In order to analyse a new case and generate a skeleton argument (a so-called ‘claim lattice’), HYPO requested that the user enter the relevant facts, and select the corresponding dimensions and cases which should be followed or distinguished. The foundation of HYPO included a knowledge base of cases (eg *Telex v IBM*<sup>51</sup>) and a library of dimensions (eg ‘Agreed-Not-To-Disclose-Information’) which were organised according to their relative strength. Similar to actual skeleton arguments, HYPO generated persuasive hypotheticals where no actual case was available to provide an authoritative argument. And similar to the approach we use for approaching problem scenarios in contract law, HYPO’s claim lattice was presented in a dialectical manner as an exchange of arguments between claimant and defendant. The system was designed to assist legal case-based reasoning and not as an automated decision-making tool. Once the arguments were laid bare by the system in a structured manner, the outcome was left to the user to decide.

Some of HYPO’s dimensions operated with magnitudes and ranges which made modelling legal knowledge and evaluating cases difficult. The successor system CATO by Vincent Aleven and Kevin Ashley<sup>52</sup> simplified the design by translating dimensions to binary factors which either apply or not to the present case. As Aleven writes, ‘[a]lthough generally a factor is neither necessary nor sufficient to decide a legal

---

<sup>50</sup> Rissland (n 12).

<sup>51</sup> *Telex Corp v. International Business Machines Corp*, 510 F 2d 894 (10th Cir. 1975).

<sup>52</sup> Aleven and Ashley (n 12).



claim, all else being equal the presence of a factor makes a case stronger or weaker for the plaintiff'.<sup>53</sup> In contrast to HYPO and other prototype legal expert systems like GREBE,<sup>54</sup> CABARET,<sup>55</sup> CHASER,<sup>56</sup> and BankXX<sup>57</sup> which modelled reasoning strategies of skilled lawyers, CATO was designed as an instructional tool to develop case-based reasoning skills of fresh law graduates. It assisted in selecting the relevant issues, mapping them in a hierarchical graph, and organising persuasive arguments around them. What we effectively do in the classroom is a manual version of the CATO computer tool, simplified even further for first-year undergraduate law students.

### E *Stage Five: Finalising Legal Advice*

We bring all the above together and finalise the legal advice in the fifth and final stage of our guided approach to problem solving in contract law. We have regularly reminded students throughout the stages that a systematic approach to problem solving is not to be confused with a template or recipe, and the legal advice as the end product needs to be customised to the problem scenario at hand. The advice needs to be relevant. This means that students should avoid discussing trivial points. For example, if the offer to sell is obvious, the legal advice should not waste time on whether the offer was merely an invitation to treat or some other type of communication. Instead, students are expected to give emphasis and depth to the contentious aspects like the method of communicating acceptance in the example included in Table 2. Their polished legal advice should highlight such issues straight in the beginning to produce economical and rhetorically compelling advice.

The effective arrangement of issues and the persuasive presentation of the advice is a truly human exercise. It is a creative piece of communication that considers the social context and strikes a tone appropriate to the client. Beyond facts and arguments, the problem question's fact pattern tells a story which is the reason why, according to Bret Rappaport, storytelling techniques could boost the persuasive power of legal writing. Rappaport aims to awaken 'law students from the IRAC slumber to realize the awesome persuasive power of a story' not by 'show-and-tell', but by 'open[ing] minds to learning' and making students excited about producing a persuasive piece of legal prose.<sup>58</sup>

We do not see how machine-assisted or machine-inspired methods could contribute to this stage. Let's say we had a large enough corpus

---

<sup>53</sup> Ibid 190.

<sup>54</sup> L Karl Branting, 'Building Explanations from Rules and Structured Cases' (1991) 34(6) *International Journal of Man-Machine Studies* 797.

<sup>55</sup> Edwina L Rissland and David B Skalak, 'CABARET: Rule Interpretation in a Hybrid Architecture' (1991) 34(6) *International Journal of Man-Machine Studies* 839.

<sup>56</sup> Barbara Cuthill and Robert McCartney, 'Issue Spotting in CHASER' (1994) 2(2) *Artificial Intelligence and Law* 83.

<sup>57</sup> Edwina L Rissland, David B Skalak and M Timur Friedman, 'BankXX: Supporting Legal Arguments Through Heuristic Retrieval' (1996) 4 *Artificial Intelligence and Law* 1.

<sup>58</sup> Rappaport (n 38), 282-283.

based on which we could build a language model, we could still only provide some assistance with superficial stylistic finish, but not with the tailor-made structure of the advice. The latter is based on a commonsense understanding of client behaviour and client expectation in a complex social context, and we do not currently see how this understanding could be encoded and then computed by a machine. We just need to accept or probably celebrate the fact that human creativity plays an indispensable part in producing legal advice.

In workshops and seminars, we revisit the stages and discuss how they all link together. We relate the bridging of the stages to the general feedback we provide on the formative assignment and talk through excerpts of best practice from formative submissions to demonstrate what we mean by elegant, logical and persuasive legal advice. We advise students to visualise a distressed client or an impatient court panel which expect clarity and brevity, but with enough depth at the relevant points to make the legal advice work. One of our workshops, for example, offered guidance for proof-reading and editing legal advice for length. When we work in small groups in seminars, we ask students to write paragraphs together in a collaborative document (for example, Google Doc), or take detailed notes for an advocacy-style presentation where counsels for the claimant and defendant take turns. In our experience, when students are equipped with well-prepared arguments, this advocacy-style exercise becomes the highlight of seminar activities. We discuss the structure and style of persuasive legal advice according to the work students produce in class.

We concede to students that this final stage is more art than science, the stage where their personal professional style should shine through. We point to memorable excerpts from landmark judgments which showcase best practice, for example, by talking through a paragraph or two by Lord Denning on the ‘red hand rule’ from *Spurling v Bradshaw*.<sup>59</sup> We want to make students feel confident and empowered that they do not have to hide behind awkward legalese but communicate their advice in plain English with a rhetorical flourish characteristic to them.

### III REFLECTION

There is a fine balance to strike in teaching the law of contract as a core subject in the first year of an English undergraduate law degree. We neither want to dumb the subject down, nor do we want to overwhelm students with a debilitating amount of detail too early. In our experience, the ‘sink-or-swim’ approach mentioned in this paper’s motto<sup>60</sup> may work with select students or at advanced levels, but our approach works for first-year undergraduate law students with diverse skills, learning needs, learning styles and educational backgrounds. It empowers those who are not yet confident, while challenging those whose study skills are already solid.

---

<sup>59</sup> *J Spurling Ltd v Bradshaw* [1956] EWCA Civ 3.

<sup>60</sup> Miller and Charles (n 1), 192-193.

Our teaching experience largely reflects findings from recent pedagogical research on the study of law at university. Traditional legal education (taking the form of lectures and tutorials) is not seen to prepare students for legal practice in the real world where lawyers are tasked with advising on overlapping areas of law.<sup>61</sup> Law firms are also seeking problem solving ability as a key employability skill.<sup>62</sup> Students in their first year of university have been observed to often lack the necessary analytical skills,<sup>63</sup> in particular with respect to problem-solving.<sup>64</sup> One reason is that A-levels do not require students to engage with critical analysis of complex texts and to be independent learners.<sup>65</sup> This may explain our initial observation of difficulties, perceived sometimes as unwillingness, to engage in problem question work in tutorials and limited assessment responses. The answer, we believe, is to equip students with an admittedly simplistic and holistic scaffolding to produce legal advice. We construct a foundation that students are invited to deconstruct at a later stage of their university education. Therefore, our five-stage guided approach does not replace higher-order thinking, but serves as a precursor to it, the stepping stone to developing deductive and inductive reasoning techniques at a later stage.

It has been observed that the use of problem-based learning brings legal education and the real world closer together,<sup>66</sup> but it is also a valuable educational tool in its own right. In problem-based learning, Wong observes that:

[T]he process of learning is as important as the content of learning... [problem-based learning] helps students appreciate the open-textured and indeterminate nature of law and to view the law as a social phenomenon, placing law in its social context.<sup>67</sup>

Our teaching practice highlighted the indeterminacy of the possible outcomes to problem questions to encourage students to employ our guidance in a customised and individualised fashion. The problem-based learning content therefore has complemented our methodological focus on equipping students to locate possible solutions for themselves.

We also embedded the development of study and lawyering skills into our primary teaching delivery, for example, the reintroduction of primary sources and of case readings.<sup>68</sup> Our paper outlined how we propose to reinforce or introduce case reading in our method, which has previously been subsumed as an expectation for seminar preparation.

---

<sup>61</sup> Yang Joel Wong, 'Harnessing the Potential of Problem-Based Learning in Legal Education' (2003) 37(2) *The Law Teacher* 157, 158.

<sup>62</sup> Jenny Knox and Melanie Stone, 'Embedding Employability Skills for the Legal Professionals of the Future' (2019) 53(1) *The Law Teacher* 90, 93; Paul Mitchard, 'Professional Training in Legal Education: The Case of Hong Kong' (2022) 56(4) *The Law Teacher* 522.

<sup>63</sup> Helene Tyrrell and Joshua Jowitt, 'Let Them Eat Cases! Bridging the Gap Between School and Degree Level Learning' (2022) 56(2) *The Law Teacher* 271, 272.

<sup>64</sup> Lisa Claydon, 'Engaging and Motivating Students: Assessment to Aid Student Learning on a First Year Core Law Module' (2009) 43(3) *The Law Teacher* 269, 271.

<sup>65</sup> Tyrrell and Jowitt (n 63), 273.

<sup>66</sup> Wong (n 61), 158.

<sup>67</sup> *Ibid* 159.

<sup>68</sup> Tyrrell and Jowitt (n 63), 275.

Others have also recommended embedding problem-solving skills and developing these within the module.<sup>69</sup> We feel this gives support to one of the central aspects of our method which integrates such skills from the point of the lecture through the workshop and into the seminar. The primary reason for embedding skills to the teaching of contract law is not simply to practice skills with more legal substance, but to achieve the learning outcomes of contract law itself more effectively.

However, developments in pedagogy are also challenged by perceptions of student responses and needs - and sector-wide institutional pressures to enhance student satisfaction. Studies have observed that 'spoon-feeding is expected and challenging tasks are unacceptable'.<sup>70</sup> This is an expectation that we have encountered many times, which we hope our interactive method helps counter. There is also well documented dissatisfaction with the Socratic method of teaching<sup>71</sup> — something we have also experienced in our teaching. Our experience shows that our method could counter such pressure as it is designed to increase students' preparedness for teaching events and can help reduce the distress associated with being put on the spot with a question.

#### IV CONCLUSION

Our guided approach in contract law is very much a birth child of its time. While the initial enquiry-based model focusing on problem solving was designed for the academic year 2018-19 when, in hindsight, everything was pretty much normal, the approach has reached its current form as a response to Covid restrictions and the educational challenges they exacerbated. We started using computer tools, semi-formal logical analysis and visualisation techniques to maintain engagement in an online setting and reinforce skills that students can rely on while studying in isolation. As we returned to some form of normality, our approach built on these Covid-induced techniques and developed them further as appropriate for in-person teaching. Our ultimate goal is to build a pedagogical approach to teaching contract law that develops and harnesses the skills of a diverse student body to equip all students with the confidence and ability to perform at a high level in answering problem questions.

This is still a work in progress. In coming years, we want to reinforce stage one so that students sketch legal doctrine primarily according to their experience of reading case law and rely less on accounts we provide them on lecture slides and textbooks, accounts which are necessarily somewhat secondary and artificial. In the same

---

<sup>69</sup> Claydon (n 64) 271.

<sup>70</sup> Elizabeth Nixon, Richard Scullion and Robert Hearn, 'Her Majesty the Student: Marketised Higher Education and the Narcissistic (Dis)Satisfactions of the Student-Consumer' (2018) 43(6) *Studies in Higher Education* 927, 933.

<sup>71</sup> Scott Taylor and Ruth McGregor, 'Bang Goes the Theory: Debunking Traditional Legal Education' (2010) 3 *Phoenix Law Review* 309; Maureen F. Fitzgerald, 'Rite of Passage: The Impact of Teaching Methods on First Year Law students' (2008) 42(1) *The Law Teacher* 60, 62.

spirit of working more with real-life primary sources, we want to introduce continuous and authentic assessment mirroring the steps of private procedure to transform problem solving to an exercise imitating real-life lawyering tasks. We are conscious of our own technological limitations when creating maps and intend on exploring different and enhanced visualisation strategies suitable for a student body which is diverse in terms of skills, learning needs, learning styles and educational background. Specifically, adapting visual aids and making the approach more suitable to neuro-diverse students is an area we would like to explore further in the future. We also want to create a structured feedback mechanism to collect qualitative and quantitative data about the performance of this model in different educational settings in which students and the teaching team could contribute to the continuous development of the approach. Specifically, we are in the process of organising workshops where students would experiment with visualisation techniques (eg Lego©) for stage four. The workshops would be offered to students who had been taught Contract Law in our five-stage model and to students who have followed a different approach. We are interested in exploring how our approach to problem solving can serve as a basis to apply formal methods of legal reasoning at a later stage of one's university law degree.

Mind mapping in educational practice and semi-formal modelling of arguments in computational law may have been around for decades, but the systematic application of a combined technique through all stages of teaching contract law is, according to preliminary feedback and assessment outcomes, proving to be highly effective. There have been attempts to bring computational law into educational practice of which the CATO tool has been the most celebrated, but still isolated attempt.<sup>72</sup> We do not see education as a hunting ground for computational modelling of legal arguments, but the other way round, we take inspiration from computational law. Our interest is to enrich the teaching of a core law subject where traditional approaches may need a bit of shake-up. Our approach is a testimony to our belief that modelling is not only for knowledge engineers and doctrinal thinkers but also for students who could benefit from using it creatively.

---

<sup>72</sup> Aleven and Ashley (n 12); Aleven (n 12).