



The role of cognitive reasoning and decision making and user testing in the enhancement of communication of legislative messages in a digital age

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Abstract

Legislative drafting is an essential means devised for the facilitation of the implementation of government policies by governments in various jurisdictions. The drafting of legislation has to take into account the various users of the legislation and balance their various interests while maintaining the policy objectives for which the legislation is enacted. The changing needs of the users of legislation have necessitated the revision of the manner in which regulatory messages are communicated to users more effectively. The changing needs of users consequently require constant analysis in order to ensure that the legislation developed is increasingly capable of more effective implementation.

Legislation has traditionally been viewed as a complex and technical myriad of words that are beyond the attainment of an ordinary user despite it being designed to regulate the very fabric of the user's existence in a civilised society. Further, legislation has in some instances been criticised from being too detached from the aspiration of the people that it regulates. This challenge is further exacerbated by the fact that compliance with increasingly complex legislation is becoming more and more essential as society continues to evolve and be influenced by technology and other factors that require a revision of the traditional view and utility of legislation.

The changing uses of legislation and the increasing diversity of its users has given rise to the increased need to test the usability of legislation in order to ensure that the regulatory messages that it presents are usable by the various audiences at which it is targeted, on a cognitive level, in order to ensure its universal application to the greatest extent possible. This discussion aims to examine the role of cognitive reasoning and decision making as well as user testing in the legislative drafting process and how this can be used to ensure more effective communication of regulatory messages for the effective implementation of legislation.

Introduction

The Function of Legislation: Jurisprudential Perspectives

Legislation has historically served various purposes depending on the needs of the various societies which it was an integral part of. There have been various schools of thought that have attempted to define the function of law, while others have equally attempted to define the role of the drafter in the legislative process. Generally though, legislation has served to define various relationships among the various users of the legislation and these defined relationships have been supported by institutional and coercive mechanisms in order to ensure compliance with the legislation.

According to John Austin¹ and Hans Kelsen² law is the command of the sovereign and is not premised on morality. Law is a thing that should be obeyed as it is an articulation of how things are and not how they ought to be. By contrast the principle of utilitarianism, as advanced by Jeremy Bentham³ and John Stuart Mill⁴ believed that law was meant to give effect to the greatest good for the greatest number and that law was tied to collective societal happiness. Further, the Scandinavian realists led by Karl Olivecrona⁵ argued the existence of law as a fact, and postulated the existence of law as a state of objective reality, as opposed to being predicated on the metaphysical.

It has been generally acknowledged that legislation plays the primary role of defining legal relationships and particularly delineating rights, obligations, powers, privileges and duties, among other matters. Legislation stipulates what to do and what not to do.⁶ In order to achieve its intended function, legislation has to possess certain characteristics that allow it to be clearly understood and usable by the various people who call the legislation into aid. According to Stefanou⁷ in the era of digital communication the ability to control aspects of communication is a crucial, though indirect, source of power. Importantly, in public affairs the ability to determine how issues are discussed is an important source of power.

Increasingly, the utility of legislation has undergone a radical transformation as a result of the changing needs of the users of the legislation. Access and utilisation of legal resources was previously the preserve of legal professionals, public officials and specialised agencies generally. The advent of the internet has led to a proliferation of direct use of legal resources by ordinary citizens. The direct use of legal resources by citizens has reduced the need for services of intermediaries such as lawyers in enforcing legal rights. According to Susskind⁸, the transformation of use of legislation in the digital age will be characterised by the increased use of legal guidance systems; more participative legal processes; notification of promulgation and electronic versions of law; enhanced voluntary legal services; public administration systems; multi-disciplinary systems and services; law embedded in systems generally; widespread institutional memories and knowledge management; international collaboration; case management; virtual legal teams; automated documents assembly; legal diagnostic systems; virtual legal libraries; online judicial decisions on the internet; distance learning online and electronic transcription.⁹ The list of uses of legislation and the various potential users is however not exhaustive. It is apparent however that the increasingly changing diversity of use of legislation requires the adoption of mechanism for the development of more effective means of ensuring that that legislation achieves its intended objectives as envisaged by the policy makers responsible for the promulgation of the legislation.

Although the uses of legislation and the mechanisms for the dissemination of the legislation are constantly changing, the fundamental need for legislation to be enacted and communicated through the use of language has remained constant and therefore the need for the law to be drafted and to communicate the relevant regulatory messages to the various audiences at which it is target has not diminished in any way.

¹ See John Austin, *The Province of Jurisprudence Determined* (John Murray, Albemarle Street, 1832)

² See Hans Kelsen, *Pure Theory of Law* (Translated from the Second German Edition by Max Knight. Berkeley: University of California Press, 1967)

³ See Rociu Daniel Eduard, ed. Jeremy Bentham, *An Introduction to the principles and Morals of Legislation* (RED Publishing House, 2014)

⁴ See John Stuart Mill, *Utilitarianism and On Liberty: Including 'Essay on Bentham' and Selections from the Writings of Jeremy Bentham and John Austin* (Blackwell publishing limited, 2003)

⁵ See Karl Olivecrona, *Law as Fact* (2nd edn, Stevens & Sons, 1971)

⁶ VCRAC Crabbe, *Legislative Drafting*, (Cavendish Publishing Limited, 1993)

⁷ Constantin Stefanou, 'Legislative Drafting as a form of Communication' in Luzius Mader and Marta Tavares de Almeida (eds), *Quality of Legislation Principles and Instruments* (Nomos 2011) 308

⁸ Richard Susskind, *The Future of Law-Facing the Challenges of Information Technology*, (Oxford University Press, 1996)

⁹ Richard Susskind, *The Future of Law*, 149 to 191

Essential Characteristics for Usability of Legislation

Legislation is generally of little or no value if it is not capable of being effectively utilised. It is therefore critical that legislation should possess certain fundamental characteristics in order to be effective. The three main characteristics of legislation that support its usability, especially in a digital age are clarity, precision and unambiguity. Xanthaki¹⁰ has observed that *in the same way which appropriate structure can inform clarity in the sense of quick comprehension, language choices can also inform clarity, precision and unambiguity*.¹¹ Xanthaki further notes that clarity, precision and unambiguity contribute to effectiveness, which is the ultimate objective of legislative drafters.¹²

The usability of legislation also relies on the need for modern Standard English, which enjoys contemporary usage at a particular time, thereby making it easily understood. Lord Thring¹³ has observed that clarity is predicated on the selection of words on their arrangement and construction of legislation. Plain language has additionally been accepted as an effective tool for the clarity, precision and unambiguity. Plain language has been argued to avoid obscurity, inflated vocabulary and convoluted sentence structure.¹⁴

Legislation as Communication

Legislation has been argued by various scholars to be a form of communication.¹⁵ According to Thornton¹⁶, communication is of the essence in every society and consequently a society cannot exist as a social community unless its members can communicate with each other. Thornton further noted that *so far as human societies are concerned, language is the most important medium of communication, particularly so far as the regulation and control of society itself are concerned*.¹⁷ Like any other form of communication, Stefanou notes that there are certain features that need to be present in order for the communication to be successful. Accordingly, there must be a sender, a message, a communications channel and a recipient of the message.¹⁸

Stefanou further notes however that effective communication can however be disrupted by various factors, referred to as noise, that distort the original message as intended to be communicated.¹⁹ Since legislation has been acknowledged as a form of communication, the expected outcome of the communication process is that it should produce a specified result, if it is to be considered successful or effective. The impact of communication on the recipient side of the communication channel is therefore dependent on the ability of the message to cause cognition on the part of the recipient of the message. The key responsibility of the drafter in delivering an effective message is therefore the production of a clear, precise and unambiguous draft in plain language that is easily understood by the intended audiences.

Legislative Drafters and the Communication of Legislative Messages

In order to determine whether legislative drafters are able to communicate effectively through their drafts, it is important to more precisely understand the role of drafters in the drafting process,

¹⁰ Helen Xanthaki, *Drafting Legislation: Art and Technology of Rules for Regulation* (Hart Publishing, 2014)

¹¹ *Ibid*, 85

¹² *Ibid*, 85

¹³ Lord H Thring (1902) at 61 in Constantin Stefanou and Helen Xanthaki (eds.), *Drafting Legislation: A modern Approach*, (Aldershot: Ashgate, 2008)

¹⁴ Xanthaki, *Drafting Legislation*, (2014) 12

¹⁵ See Stefanou, 'Legislative Drafting as a form of Communication' (note 7), VCRAC Crabbe, *Legislative Drafting*, (Cavendish Publishing Limited, 1993, 27), R. Dickerson, *The Fundamentals of Legal Drafting*, (Little Brown and Co, 1986, 25-50) and G.C. Thornton, *Legislative Drafting*, 4th edn, (Butterworths, 1996)

¹⁶ G.C. Thornton, *Legislative Drafting*, 4th edn, (Butterworths, 1996), 1

¹⁷ *Ibid*, 1

¹⁸ Stefanou, 'Legislative Drafting as a form of Communication' (note 7)

¹⁹ Stefanou, 'Legislative Drafting as a form of Communication', p.313 (note 7)

within the wider context of communication of regulatory messages. Thornton has observed that the regulation of society is the field in which the legislative drafter toils, where the main task is to frame the communication of policy decisions having legal consequences for members of society.²⁰

Additionally Thornton argues that the proper role of drafters lies between two extreme views. Firstly, that drafters do nothing more than select words as if from a shelf and arrange them in a defined order. Secondly, that it is the responsibility of drafters to develop broad ideas into practical schemes.²¹ Thornton disagrees with these views of the role of drafters and stresses that the proper role of drafters is creative and positive wherein the drafter converts developed legislative policies into legislative form. He further elaborates this point by stating that the drafter achieves the role through skilful questioning, constructive comments and suggestions, which include the proposal of possible alternative solutions to the problem of achieving the desired policy objectives.²²

The task of effectively communicating to different audiences by the legislative drafter is neither an enviable nor simple one. Sir Stephen Laws has noted that one of the main balancing exercises a drafter of legislation has to perform is the harmonising of interests of various audiences for the legislation.²³ Sir Stephen further notes that there are many audiences a drafter has to consider including the drafter's clients, potential legislative users, parliamentarians and the courts. These categorisations may further fall into sub-categories consisting legal and non-legal professionals as well as lay persons generally.²⁴

In order for the legislative drafter to prepare a legislative text that effectively communicates to their intended audience, the drafter has to undertake the five stages of the legislative process as articulated by Thornton. These stages involve understanding the proposal; analysing the proposal; designing the law; composing and developing the draft and lastly, verifying the draft.²⁵ Xanthaki notes that in practice, the understanding of the proposal involves the receipt and careful reading of drafting instructions compiled by the policy and legal instructing officers of the department that requests the drafting of legislation.²⁶ Xanthaki further notes that analysing the proposal involves an analysis report on the rudimentary elements of the drafter's response to the drafting instructions.²⁷ The composition stage, which is a crucial part of the communication of the policy intention through the legislation, involves designing the legislation, through structuring of the legislative text in a way that ensures understanding and elicits implementation.²⁸ This stage is normally followed by the drafting of the text and the verification of the text. Verification entails scrutiny of the legislative text in order to improve its clarity and confirm its efficacy. This stage requires examination of legal form, clarity and comprehensibility.²⁹

The Sociology of Deviance and Compliance

From the preceding discussion it is evident that the process of developing and utilising legislation as a means of communication is not a simple one and requires considerable conscientious effort to undertake successfully. Once the message of the legislation has been communicated, there remains the determination of whether the message has been appropriately received and whether the legislation creates the intended impact.

²⁰ G.C. Thornton, *Legislative Drafting*, 1 (note 16)

²¹ *Ibid*, 125

²² *Ibid*, 125

²³ Stephen Laws, 'Drawing the line', in Constantin Stefanou and Helen Xanthaki (eds.), *Drafting Legislation: A modern Approach*, (Aldershot: Ashgate, 2008), 24

²⁴ Stephen Laws, 'Drawing the line', 24 (note 23)

²⁵ Helen Xanthaki, *Thornton's Legislative Drafting* (5th edn. Bloomsbury 2013), pp.145-162.

²⁶ Helen Xanthaki, 'Legislative drafting: a new sub-discipline of law is born' (2013 IALS SLR Volume 1, Issue 1, Autumn, 58

²⁷ *Ibid*, 58

²⁸ *Ibid*, 58

²⁹ *Ibid*, 62

The phenomenon of deviance is the genesis of the argument to substantiate the need for the existence of legislation. According to Brym and Lie³⁰ the distribution of power is especially important in the social construction of deviance and crime because norms vary widely and as a result, deviance is relative. They argue that what some people consider normal, others consider deviant, and vice versa. An act is not deviant *per se*. Brym and Lie state that people commit deviant acts only when they break a norm and cause others to react negatively. From a sociological point of view, according to Brym and Lie everyone is a deviant in one social context or another.³¹

One of the general objectives of legislation is behavioural modification that results in compliance with the provision of the legislation. One of the means of determining the success of legislation in the modification of behaviour lies in understanding the sociological aspects of normative concepts and their ability to curtail deviance and enforce compliance. This process is commonly referred to as the ability of legislation to cure the mischief which it is intended to cure.³² Siedman and Siedman³³ have stated that in order to utilise law effectively as an instrument of social change, a legislative drafter must predict the behaviours that a proposed legislation will likely induce, as well as their likely impact on the targeted problem addressed.

Seidman and Seidman further argue that one cannot act purposively unless one can predict the outcome of one's actions.³⁴ They also note that the reason drafters experience difficulty in predicting behaviours when confronted by a newly-designed rule resides in the methodologies that, the world around, drafters commonly adopt.³⁵ Seidman and Seidman state that *lawmakers, including drafters, too often believe that they need only to specify their vision of a new law's goal and then miraculously society will conform.*³⁶ They additionally note that behavioural change, however, requires more than mere prescription.³⁷ This assertion finds a lot of support, especially when viewed in light of the fact that there has been no real empirical testing of the effect of legislation related to the cognitive response that is elicits from the individual recipients of legislative messages in order to determine whether people consciously comply with specific norms or this merely happened by default as a result of the lifestyle of the audiences of the legislative messages.

In discussing the social norms as they relate to modification or definition of human behaviour, Sumner³⁸ claims in studying social norms, that legislation has little or no independent influence upon behaviour. Sumner further argues that extensive deviance from the rules of law is no proof that the law has been without influence. Conversely, neither is conformity to rules certain evidence that it has been effective.³⁹ This basic argument is further elaborated by various other scholars.⁴⁰ In particular, Kornblum argues that norms do not generally derive their enforceability from their mere existence but from the occurrence of the mischief they are designed to address.⁴¹

³⁰ Robert J Brym, John Lie, *Sociology: Your compass for a New World* (2nd edn, Thomson, Wadsworth, 2007)

³¹ Robert J Brym, John Lie, *Sociology: Your compass for a New World* (2nd edn, Thomson, Wadsworth, 2007), p. 140

³² See Justice Keith Mason, 'Legislator's Intent: How Judges Discern it and What They Do if They Find it' in Constantine Stefanou and Helen Xanthaki (eds.), *Drafting Legislation: A modern Approach*, (Aldershot: Ashgate, 2008) ,p. 54

³³ Ann Seidman and Robert B. Seidman 'ILTAM: Drafting Evidence-Based Legislation for Democratic Social Change' (2009) Vol. 89, BUL Rev, 435, 448

³⁴ *Ibid*, 449

³⁵ *Ibid*, 449

³⁶ *Ibid*, 449

³⁷ *Ibid*, 449

³⁸ William Graham Sumner, *Folkways*, (Ginn and Company 1906), 77; Dover edition (Dover Publications limited 2002)

³⁹ *Ibid*, 77

⁴⁰ See George Eaton Simpson and John Milton Yinger, *Racial and Cultural Minorities: An Analysis of Prejudice and Discrimination*, 5th edition (Plenum Press, 1985) and Harry Ball, George Eaton Simpson and Kiyoshi Ikeda 'A Re-Examination of William Graham Sumner on Law and Social Change' (1962) Vol. 14, No. 3 *Journal of Legal Education* (Association of American Law Schools) 299-316

⁴¹ William Kornblum, *Sociology in a changing world* 9th ed. (Wadsworth, Cengage Learning, 2008), 14

An analysis of Sumer's argument suggests that legislation in and of itself does not necessarily trigger a cognitive response. Additionally, according to Vilhelm Aubert,⁴² there is a relationship between actual contact with the law and correctness in perception of legal norms. He argues that perception of norms is closely related to the degree of exposure to or contact with a particular law. Additionally, he argues that it appears likely that the correct perception of norms, especially in the lesser known norms, is caused by contact with the law.⁴³

From the foregoing, it is apparent that the phenomenon of deviance and compliance with legal norms cannot be analysed without taking into account the role played by legislative drafting as a means of communication. Additionally, an examination of the effectiveness of this communication cannot be undertaken without analysing the cognitive effect of the legislation and the conducting of user testing to determine whether the messages communicated through legislation actually survive the noise that is present in the communications channel and are received and perceived by the various target audiences with minimal or no distortions.

Cognitive Reasoning and Legislative Drafting as Communication

As stated earlier, communication must have a sender, message channel and a recipient in order to be considered complete. Legislation, as a form of communication, is intended to induce behaviour change in order to be effective.⁴⁴ The inducement of behavioural change however cannot occur in a vacuum and requires the recipient of the message contained in a particular piece of legislation to definitively react to the legislative message.

It is worth noting that there is a generally accepted principle that reasoning is the hallmark of human thought, supporting the process of discovery that leads from what is known or hypothesized, to what is unknown or implicit in one's thinking.⁴⁵ Further arguments are made that reasoning can take the form of deductive inference, whereby the evidence guarantees the truth of the conclusion, or alternatively, when reasoning depends on conditions of uncertainty, it takes the form of inductive inference. Here, proof provides only limited support for the truth of the conclusion.⁴⁶ It is further acknowledged that many forms of reasoning typically depend on conditions of uncertainty, including problem solving, causal reasoning, and analogical inference.⁴⁷

Legislative drafting as a process is predicated on the ability of the drafter to resolve problems that are presented to the drafter by the policy maker and which require to be resolved through a legislative solution, based on the beliefs of the instructing policy makers. Cognitive science recognises that problem solving refers broadly to the inferential steps that lead from a given state of affairs to a desired goal state.⁴⁸ An example has been provided to illustrate the cognitive aspects of decision-making and problem solving. Deciding who to vote for in a presidential election, diagnosing a patient on the basis of observed symptoms, or preparing for a mountain climbing expedition all depend on problem solving cognitive ability.⁴⁹ Problem solving is generally therefore acknowledged as requiring the process of planning, namely, formulating a method for attaining a desired goal state. Planning is therefore accomplished by modelling the situation and observing the consequences of possible actions.⁵⁰ In relation to the role of the drafter, the planning in relation to legislation places a burden on the drafter to predict with the greatest amount of accuracy possible, the behaviour of the recipients of the legislative message.

⁴² Vilhelm Aubert 'Contributions to the Sociology of Law' (1966) Vol. 10, No. ½, *Acta Sociologica*, (Sage Publications Ltd): 98, 100

⁴³ *Ibid*, 117

⁴⁴ See note 18

⁴⁵ *Encyclopedia of Neuroscience* (2009), vol. 8, 35-43

⁴⁶ *Ibid*, 35

⁴⁷ *Encyclopedia of Neuroscience* (2009), vol. 8, 35-43

⁴⁸ *Ibid*, 35

⁴⁹ *Ibid*, 35

⁵⁰ *Encyclopedia of Neuroscience* (2009), vol. 8, 35-43

Scholars have observed that theories that view the mind as containing specialised reasoning modules, are distinguishable from theories that view the mind as containing general-purpose reasoning systems. Thus according to the modular view, the mind consists of specialised modules that are unavailable to conscious awareness and deliberate control. This has been referred to as cognitive impenetrability. The modules are stated to be only able to process specific types of information, a phenomenon known as information encapsulation.⁵¹

The proponents of the modular view have proposed a diversity of modules that underlie reasoning, including modules for semantic inference, communicative pragmatics, social exchange, intuitive numbers, spatial relations, naive physics, and biomechanical motion.⁵² When viewed in the context of the core function of the drafter, the modular approach does not require greater elaboration, apart from stating that although the drafter is trained to take into account local conditions and context in relation to the draft, the drafter is trained to avoid being swayed by emotional or other considerations at the expense of the technical requirements of the task at hand. It has been observed that if cognitive architecture emerges from an underlying neural architecture, then strong modular views predict that the neural systems for reasoning should be relatively localised, implementing modules that are cognitively impenetrable and informationally encapsulated.⁵³

It has also been alternatively suggested by dual-process theorists that reasoning is based on two general-purpose systems: an associative system and a rule-based system. The associative system uses basic cognitive operations such as association, similarity, and memory retrieval to produce primitive judgments quickly and unconsciously.⁵⁴ This view would support the view that legislation can no longer be drafted without due regard to the cognitive responses that it elicits as the word contained in a legislative message are primarily targeted at the human brain, in a manner that requires it to respond to the message in a particular manner.

From the proposition of the duality of the general purpose systems therefore, it is argued that the rule-based system reflects more evolutionarily advanced mechanisms that implement reasoning procedures deliberately and consciously. To this end, it has been observed that inductive reasoning largely depends on the retrieval and evaluation of world knowledge, whereas deductive reasoning depends on rule-based, formal procedures.⁵⁵ Since legislative drafting is concerned with the development of rule based systems premised on fundamental knowledge of certain defined concepts, cognitive reasoning and legislative drafting should enjoy a closer relationship, manifested through increased cognitive user testing.

The process of adhering to a message is therefore premised on the ability of the recipient to receive, perceive and understand the message before acting upon it. The process is therefore one which requires cognitive reasoning in order to be completed. Cognitive processes therefore should not be ignored by the drafter but should instead be added to the tools that the drafter uses, in conjunction with other disciplines, to ensure clarity, precision and unambiguity.

Goel⁵⁶ further explains that reasoning is the cognitive activity of drawing inferences from given information, which involves the claim that one or more propositions, the premises, provide reasons for accepting another proposition, which is the conclusion.⁵⁷ Of particular interest is Goel's explanation that two theories of deductive reasoning namely mental logic and mental models dominate the cognitive literature. According to Goel, these differ regarding the competence knowledge they utilise,

⁵¹ Ibid, 35-43

⁵² Ibid, 35-43

⁵³ Ibid, 35-43

⁵⁴ Ibid, 35-43

⁵⁵ Ibid, 35-43

⁵⁶ Goel, Vinod 'Cognitive Neuroscience of Deductive Reasoning' in Keith J Holyoak and Robert G Morrison,(Eds), *The Cambridge Handbook of Thinking And Reasoning* (Cambridge University Press 2005) 475-492)

⁵⁷ Ibid, 477

the mental representations they postulate, the mechanisms they invoke, and the neuroanatomical predictions they make.⁵⁸

According to Goel, mental logic theories postulate that Reasoners have an underlying competence knowledge of the inferential role of the closed form, or logical terms, of the language for example 'all', 'some', 'none', 'and', etc.,. The internal representation of arguments preserves the structural properties of the propositional strings in which the premises are stated. A mechanism of inference is applied to these representations to draw conclusions from premises. Essentially, the claim is that deductive reasoning is a rule governed process defined over syntactic strings.⁵⁹

Goel further elaborates that by contrast, mental model theory postulates that Reasoners possess an underlying competence knowledge of the meaning of the closed-form or logical terms, of language for example 'all', 'some', 'none', 'and', etc., and use this knowledge to construct and search alternative scenarios.⁶⁰ Under Goel's explanation, the internal representation of arguments preserve the structural properties of the world such as spatial relations that the propositional strings are about rather than the structural properties of the propositional strings themselves. The basic claim is that deductive reasoning is a process requiring spatial manipulation and search.⁶¹ The words that are used by drafters in the preparation of their drafts therefore require a process of selection that transcends mere anecdotal experiences and past judicial interpretation, although these are useful in aiding the drafting process and ensuring consistency in the use of words, especially when they have been judicially defined. However, the selection of the words of communication by the drafter should be premised on their ability to be understood in the clearest way possible by intended and unintended audiences alike.

In contributing to the debates on cognitive reasoning, particularly the general conceptions of cognitive reasoning Anna Ronkainen⁶² notes that humans perform reasoning in two very different ways namely intuitively, quickly and mostly unconsciously and reflectively, slowly and consciously. She further advances the argument that the idea that the human mind has several distinct modes of operation has a long and varied history from at least Plato through, among others, Descartes, Leibniz, Spinoza, and Schopenhauer to Freud. Of these, she argues that the best known version is probably Freudian, postulating an unconscious and a conscious system of thought.⁶³ Ronkainen however concedes that the dual-process hypothesis is still an evolving one and as such, is not supported by a complete consensus regarding many of its details. Or, indeed, even something as central as the actual number of processes involved, which may be two or greater.⁶⁴

From the foregoing example, it becomes apparent that the ability of the human brain to process language generally and the language of legislation specifically is predicated on an intrinsic knowledge of the terms used in language to communicate legislative messages. The possibility of insufficient or non-existent knowledge of the language employed in the communication of legislative messages therefore becomes a factor that warrants serious consideration if the pursuit of clarity, precision and unambiguity in legislation is to be achieved. The role of the drafter would at a glance therefore become paramount as the major tools that the drafter employs to communicate complex concepts are words.

⁵⁸ Ibid, 477

⁵⁹ Goel, Vinod 'Cognitive Neuroscience of Deductive Reasoning' in Keith J Holyoak and Robert G Morrison,(Eds), *The Cambridge Handbook of Thinking and Reasoning* (Cambridge University Press 2005) 477

⁶⁰ Ibid, 477

⁶¹ Ibid, 477

⁶² Anna Ronkainen, 'Dual-Process Cognition and Legal Reasoning' (2011) <<http://ssrn.com/abstract=2004336>> accessed 24 December 2014

⁶³ Ibid

⁶⁴ Anna Ronkainen, 'Dual-Process Cognition and Legal Reasoning' (2011) <<http://ssrn.com/abstract=2004336>> accessed 24 December 2014

Because of the phenomenon of cognitive reasoning, the reaction to the communication of a legislative message may trigger a positive response; wherein the recipient complies with the substance of the communication contained in the provisions of the legislative message; or a negative one, wherein the recipient consciously or subconsciously chooses not to comply with the substance of the legislative message. In exploring the use of words in the context of cognitive reasoning, the role of phonetics and linguistics will be examined in greater detail in the next part of this discussion.

Language, as a key element on the cognition process, therefore needs to be examined beyond its mere linguistic value but should be examined in the context of its cognitive value. The legislative drafter's quest for clarity, precision and unambiguity would therefore benefit from the possibilities that cognitive science has to offer in order to assist drafters better understand their clients.

Phonetics, Linguistics and Cognitive Reasoning

Throughout this discussion thus far, the role of language has been elaborated in order to provide context to the work of the drafter and as regards the communication of legal messages and the determination of their cognitive value.

It has been noted that human cognition rests on the ability to extract generalizable knowledge from a few specific examples. For example a child might first grasp the meaning of a common word, such as 'horse'. Given several examples of horses labelled prominently by the child's parents, the child is likely to make an inductive leap that goes far beyond the data observed. The child may therefore progressively judge whether any new entity is a horse or not, and would be correct in most cases, except for the occasional donkey, deer or camel.⁶⁵ It is further noted that the ability to generalise from sparse data is crucial not only in learning word meanings, but in learning about the properties of objects, cause and effect relations, social rules, and many other domains of knowledge.⁶⁶ Linguistic and phonetic clarity therefore are indispensable in aiding the communication of legislative messages and effectively predicting their impact.

Helen Xanthaki and Giulia Adriana Pennisi⁶⁷ have advanced that argument that linguistics may investigate the way in which meaning and text functions evolve in the process of text production; find out what the functions of the produced legislative texts are; and assess if the texts' functions match with the original intentions of the drafters. In turn this can allow the drafters to become aware of how the law's functions can match the intention of drafters, thus developing techniques that can lead to the desired result. They further note that clarity is therefore an essential characteristic in the legislative drafting process.

Xanthaki and Pennisi state that clarity depends on the proper selection of words and on the arrangement and the construction of sentences. Further, they credit clarity in the language of the law to enhance understanding and transparency of legislation.⁶⁸ Ambiguity is defined as uncertain or inexact meaning. According to Xanthaki and Pennisi, ambiguity exists when words can be interpreted in more than one way, for example, a 'light truck' that may either be light in weight or light in colour. Thus, they argue, semantic ambiguity occurs when a single word has more than one meaning and is cured by defining any term that people might disagree about. Syntactic ambiguity is the result of

⁶⁵ Joshua B. Tenenbaum, Thomas L. Griffiths and Charles Kemp, 'Theory-based Bayesian models of inductive learning and reasoning' *TRENDS in Cognitive Sciences* Vol.10 No.7 July 2006 <<http://www.sciencedirect.com>>

⁶⁶ Joshua B. Tenenbaum, Thomas L. Griffiths and Charles Kemp, 'Theory-based Bayesian models of inductive learning and reasoning' *TRENDS in Cognitive Sciences* Vol.10 No.7 July 2006 <<http://www.sciencedirect.com>>

⁶⁷ Helen Xanthaki and Giulia Adriana Pennisi, 'Crossing the Borders between Legislative Drafting and Linguistics: Linguists to the Aid of Legislative Drafters' in *Explorations in Language and Law* 1/2012 Novalogos. 83

⁶⁸ *Ibid*, 88

unclear sentence structure or poor placement of phrases or clauses.⁶⁹ From this elaboration, it is more evident that unclear, vague or ambiguous language causes cognitive disengagement and ultimately causes noise within the legislative communication channel.

The communication of the legislative message is also influenced by a second theory that is stated as providing a general-purpose account of reasoning that is grounded in a somewhat different pair of systems: the linguistic system and the conceptual system.⁷⁰ According to this view, the brain's language system initially produces relatively superficial information about a reasoning problem, such as word associates, syntactic structures, etc. As linguistic forms become generated, their meanings become increasingly represented in the conceptual system.⁷¹ It has been stated that a key assumption of this approach is that superficial processing based on linguistic representations is often sufficient for adequate reasoning performance. When superficial processing is insufficient, conceptual representations must be generated to produce more sophisticated reasoning. Thus, consistent with the dual-process model, this view predicts that differences in the cognitive demands of a reasoning task, namely superficial processing, contrasted with deep processing, will differentially engage neural systems.⁷² In general, it is noted that both dual coding frameworks predict that reasoning will recruit neural systems that support two forms of coding. It is argued that one important set of systems underlies language processing. A second set of important systems underlies conceptual processing, mental simulation, and imagery.⁷³

It is worth noting that the discussion relating to linguistics, phonetics and cognitive reasoning has traditionally discussed legislation in relation to its interpretation, generously assuming that there are no issues that warrant discussion in relation to the process of production of the legislation. This may be attributable in part to the fact that the role of the legislative drafter is often misunderstood, if not unknown and therefore little attention is paid to the need for support to the sub discipline that is legislative drafting.

Fundamental Principles for Effective User Testing

In order to clearly identify linguistic deficiencies in an attempt to improve the drafting and usability of legislation, it is important to have a system for the monitoring and evaluation of the cognitive impact of legislation on its audiences. This becomes increasingly important where legislation is sought to be disseminated and implemented through the automation of the communication channel and the development of artificial intelligence systems.

It is notable that usability tests identify areas where people struggle with a matter and helps make recommendations for improvement. The goal of usability testing is stated as being to better understand how real users interact with the tested matter and to improve the matter based on the results.⁷⁴ It has been further observed that the primary objective of a usability test is to improve a design and usability. In a typical usability test, real users try to accomplish typical goals, or tasks, with a matter under controlled conditions. Researchers, stakeholders, and development team members watch, listen, collect data, and take notes.⁷⁵ Notably, since usability testing employs real users performing real tasks, it potentially provides objective performance data, such as time on task, error-rate, and task success.⁷⁶ It has been acknowledged generally that there is also no substitute for watching users struggle with or have great success in completing a task when using a product. This observation helps designers and developers gain empathy with users, and help them think of

⁶⁹ Helen Xanthaki and Giulia Adriana Pennisi, 'Crossing the Borders between Legislative Drafting and Linguistics' (2012), 83

⁷⁰ *Ibid*, 88

⁷¹ *Ibid*, 88

⁷² *Encyclopedia of Neuroscience* (2009), vol. 8, 35-43

⁷³ *Ibid*, 35-43

⁷⁴ *Usability Testing Basics An Overview*, (2003) Techsmith

⁷⁵ *Ibid*

⁷⁶ *Ibid*

alternative designs that better support tasks and workflow.⁷⁷ These principles elaborated, although generally applying to information technology, are also applicable to user testing related to legislation and the measurement of the effectiveness of the communication of legislative messages. It must be noted that usability is predicated on the realisation that the overall objective of the legislative process is efficacy, and that usability is one of several applicable criteria for achieving this.

In the performance of user testing, there are a number of preparatory activities that require being undertaken such as meeting with stakeholders, to determine the goals for the test and discuss what areas will be evaluated.⁷⁸

Further considerations for user testing include the designing of the test, considering where, when and how to conduct the test and determining the scenarios and tasks as well as selecting the data to capture. It has been noted that both tasks and scenarios should be adjusted to meet the intended goals and should be part of the conversation with stakeholders about the test. In addition, it has been noted that it is important to capture qualitative data where applicable. Notably, reactions, quotes, facial expressions and participant behaviours like gesturing or pushing a chair back, are also important data points that require a human to interpret.⁷⁹ An example of this is the user testing that was carried out by the Office of the Parliamentary Counsel and The National Archives during 2012 to try and understand more about what it is like to be a reader of legislation, and whether particular drafting techniques or styles can assist readers of legislation.⁸⁰ Further research in this area has additionally been undertaken by the office of Parliamentary Counsel in Australia, which commissioned a survey in 2010, in order to gauge general impressions of the innovations amongst the target groups; gauge the extent to which the innovations are useful, and the circumstances in which they are most valuable; and seek feedback on potential new innovations.⁸¹ In both the UK and Australian user tests, the results were extremely beneficial in giving an indication of user preferences in relation to the drafting techniques being applied by the respective offices.

For each task undertaken, it is critical to have all stakeholders agree on the success paths so everyone has a common understanding about when participants are successful and when they are not. There may be only one success path or several depending on the requirements of the test. Additionally, the recruitment of participants is one of the most important components of a usability test. It has been emphasised that the participants should therefore adequately reflect a true base of users and the user types you have decided to test, and represent a range of new and experienced users in a way that would actually use your product. The ethical considerations related to user testing should also be taken into account.⁸²

The need for user testing of legislative provisions is motivated by the argument that the human brain has the ability to localise or dissociate brain function. In relation to this, Goel notes that there are two immediate contributions, localization and dissociation, that cognitive neuroscience can make to the understanding of cognitive processes, including reasoning.⁸³

⁷⁷ Usability Testing Basics An Overview, (2003) Techsmith
<<http://webservices.itcs.umich.edu/drupal/wwwsig/sites/webservices.itcs.umich.edu.drupal.wwwsig/files/Usability-Testing-Basics.pdf>> accessed 24 December 2014, 3

⁷⁸ Ibid, p. 3

⁷⁹ Ibid, p. 3

⁸⁰ Alison Bertlin, 'What works best for the reader? A study on drafting and Presenting legislation' *The Loophole*, May 2014 (Issue No. 2 of 2014) 25-49

⁸¹ ORIMA Research, 'Office of Parliamentary Counsel Results of the 2010 Legislation Users Survey', May 2010

⁸² Usability Testing Basics An Overview, (2003) Techsmith
<<http://webservices.itcs.umich.edu/drupal/wwwsig/sites/webservices.itcs.umich.edu.drupal.wwwsig/files/Usability-Testing-Basics.pdf>> accessed 24 December 2014, 8

⁸³ Goel, Vinod 'Cognitive Neuroscience of Deductive Reasoning' in Keith J Holyoak and Robert G Morrison,(Eds), *The Cambridge Handbook of Thinking and Reasoning* (Cambridge University Press 2005), 482

In contrast, embodied theories of knowledge propose that knowledge and meaning are grounded in modality-specific representations. Increasing empirical evidence from both the cognitive and the neuroscience literatures suggests that modality-specific representations underlie higher level cognition. According to this framework, concepts are represented by simulating the modality-specific states that were initially activated during perception, action, and interoception.⁸⁴

It has also been argued that embodied theories propose that simulations are organised at a higher level by simulators that integrate information across a category's instances. Over time, for example, visual information about how cakes look becomes integrated in a 'cake' simulator, along with gustatory information about how cakes taste, somatosensory information about how they feel, motor programs for interacting with them, emotional responses to experiencing them, and so forth.⁸⁵ It is further observed that because different materials and tasks produce different patterns of modality-specific activation, the same general form of reasoning does not show a single, stable pattern, and no common areas may emerge. In contrast to the 'cognitive demand hypothesis,' this view predicts that significant differences in the task and/or materials – even those that do not affect cognitive demand – are likely to dominate neural activation more than the type of reasoning performed.⁸⁶

Because of the advances in technology, the methodologies applicable to user testing have advanced and become more precise in achieving the results of the task for which they are employed. As such, it has been noted that following the advances in brain research, and especially the increased accessibility of machines using functional magnetic resonance imaging (fMRI), some researchers have started monitoring brain activity during decision making.⁸⁷ Researchers then search for correlations between the choices made and the activity in various brain centres, such as the one responsible for expressing emotion or for executing cognitive operations. It has been observed however, that this is an expensive and speculative type of research. The technical constraints result in small samples and noisy data and the interpretation of the findings is far from indisputable.⁸⁸

Effectiveness Testing of Legislation

The testing of effectiveness of legislation is by no means an easy process. It has been observed that in order to measure the effective influence of a law it is necessary to study the variables which intervene between the promulgation of the law and the behaviour. One of the most important of these variables is the level of information among the recipients of the legal communication.⁸⁹

Mousmouti in discussing the effectiveness of legislation has observed that effectiveness has become an integral part of the values and principles that characterise legislative quality. According to Mousmouti, effectiveness reflects the relationship between the purpose and the effects of legislation and expresses the extent to which it is capable of guiding the attitudes and behaviours of target populations to those prescribed by the legislator. Put simply, effectiveness expresses the extent to which a law can do the job it is intended to do and is considered the primary expression of legislative quality.⁹⁰

Mousmouti observes that purpose is the first element of the effectiveness test, where one seeks to establish what a law aims to achieve.⁹¹ Legislation usually comes as a solution to a specific

⁸⁴ Encyclopedia of Neuroscience (2009), vol. 8, 36

⁸⁵ Ibid, 36

⁸⁶ Ibid, 36

⁸⁷ Ariel Rubinstein 'Instinctive and Cognitive Reasoning: A Study of Response Times', Nota di Lavoro, Fondazione Eni Enrico Mattei, No. 36. (2006), 4 available at: <<http://hdl.handle.net/10419/74032>>

⁸⁸ Ibid, 4

⁸⁹ Vilhelm Aubert 'Contributions to the Sociology of Law', p. 100 (Note 40)

⁹⁰ Maria Mousmouti, 'The "effectiveness test" as a tool for law reform' (2014) Volume 2 Issue 1 IALS Student Law Review Autumn Special Issue: Law Reform and Child Protection p.5 <<http://journals.sas.ac.uk/lawreview/article/view/2116>>

⁹¹ Maria Mousmouti, 'The "effectiveness test" as a tool for law reform' (2014) Volume 2 Issue 1 IALS Student Law Review Autumn Special Issue: Law Reform and Child Protection p.5 <<http://journals.sas.ac.uk/lawreview/article/view/2116>>

problem or problems. This solution is expressed through a choice of legislative techniques, enforcement mechanisms and legislative expression that best serve the desired objectives.⁹²

The second step of the effectiveness test according to Mousmouti, examines these choices and attempts to identify whether the choice of legislative techniques, enforcement mechanisms and expression serve the objectives of the legislative intervention and are capable to bring about the desired results.⁹³ The relation between the law as a vision and the law in reality is not always linear, since in practice they often differ substantially. Information on the results of the law is necessary in order to evaluate its performance and determine the achievement of the desired objectives.⁹⁴

The third step of the effectiveness test as elaborated by Mousmouti examines in relation to draft legislation whether enough provision is in place in order to have data to evaluate the results of legislation or how the legislation has been applied and what its results have been. This step facilitates the learning about the real-life results and effects of legislation and connects the purpose of legislation with its real-life results.⁹⁵

The effectiveness test stipulated in this discussion is not generally applied for determining whether legislative messages will elicit the maximum cognitive response possible and therefore, through the use of language that assures the highest cognitive impact, increases the clarity, precision and unambiguity of language. Legislative drafting can therefore benefit from the utilisation of various testing methodologies under cognitive science in order to assist in the identification of phonetic and semantic devices that ensure better comprehensibility of the law.

Managing the Unintended Consequences of Legislation through User Testing: The Visa Example

Legislation may at times result in unintended consequences for user that were not envisaged at the time of its conception for one reason or another. A case in point is the visa example. Firstly, legislation in a number of jurisdictions permits or makes it practically imperative for applications for travel visas to be made online using the internet. As a result of the configurations of certain websites that are designed to facilitate the visa application process, certain questions are designed to require a mandatory response even when these details may not always be available or indeed compatible with the system configuration. For example, a simple question relating to date of birth may not be problematic in developed jurisdictions, which keep meticulous citizenship records, but may be a problem for nations where births occur in areas where they are not documented and precise dates of birth are not known. Additionally, questions relating to having next of kin in the jurisdiction in which the application is being made and which reject a response indicating the absence of relatives in the jurisdiction concern would render an application rejected for being incomplete. The more fundamental challenge of legislative interventions that make use of certain technologies mandatory for example is that the utility of these technologies acts as an automatic barrier to persons who would otherwise be able to make applications to go to the jurisdictions using these technologies, but for the restrictive nature of the technologies themselves. In the visa example, where a person has the privilege to go to a specified country under the law of that country, the fact that an application for a visa should be made online or indeed that a supporting payment should equally be made online is an unintended consequence of the legislation if it has the effect of precluding a person who has no access to the appropriate technology or allow them to make an application which they could have previously made.

⁹² Ibid, 6

⁹³ Ibid, 6

⁹⁴ Ibid, 6

⁹⁵ Ibid, 6

Because of the possibility of unintended consequences of legislation in its application, user testing is important not only at the cognitive level but also at lower levels relating to the implementation of the provisions of a given legislative message as they are understood by a person receiving the legislative message.

Conclusion

In conclusion, from the preceding discussion, it is evident that the communication of legislative messages should be targeted and more focused in order to elicit the most appropriate cognitive responses in the human brain. The advances of technology will increasingly make the need for clear dissemination of legislative messages paramount and attendant to this, the need for user testing of legislative messages will become increasingly critical. It is hoped that this discussion will encourage greater multi-disciplinary approaches to legislative drafting and drive increased fervor in the quest for clarity, precision and efficacy of law through the legislative drafting process.

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