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**INTELLECTUAL PROPERTY PROTECTION FOR E-COMMERCE BUSINESS METHODS IN SOUTH AFRICA:
ENVISIONING AN EQUITABLE MODEL FOR SMES IN THE
TOURISM INDUSTRY**

By

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Author's Declaration

I Caroline Bongiwe Ncube hereby declare that the work on which this thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being or is to be submitted for another degree in this or any other university. I authorise the University to reproduce for the purpose of research either the whole or any portion of the contents in any manner whatsoever.

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Date.....18 April 2011.....

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Abstract

Caroline B Ncube, April 2011

This thesis examines the intellectual property (IP) protection of the functional aspects of e-commerce business methods, which are embedded in the methods' underlying computer programs. It considers how South Africa can achieve an equitable balance between creators' interests in securing remuneration and attribution for, and users' interests in securing affordable access to, these methods.

The thesis' primary perspective is that of users and its arguments centre on the position of small and medium sized enterprises that provide accommodation in the tourism sector (accommodation SMEs). This is a particularly meaningful context because tourism is one of South Africa's immediate priority sectors and accommodation SMEs make an important contribution to the national economy.

The thesis uses literature to support descriptive claims about accommodation SMEs' e-commerce activities and the current IP protection of e-commerce business methods as well as normative claims about how to achieve equitable protection. It argues that a public interest approach enables the appropriate calibration of IP protection. In particular, it argues that South Africa's status as a developing country, its constitutional protection of the right to work and its national policy of promoting tourism SMEs demand that accommodation SMEs' interests be equitably catered for.

The criterion used for determining equity is whether legal certainty has been achieved with regard to the nature and scope of protection; whether the protection is compatible with the nature of computer programs, programmers' needs and practices, and whether, ultimately, the protection enables user access to affordable e-commerce business methods.

The thesis finds that existing IP protection is inequitable due to its anti-competitive, and innovation chilling effects which hinder creative efforts and, consequently, thwart access to affordable e-commerce business methods. These negative effects are primarily due to legal uncertainties, incompatibilities with the functional and abstract nature of computer programs and programming practices that favour re-use and modularisation of source code.

It then argues that certain changes in law which permit reverse engineering and partially codify the approach to non-literal copyright infringement; the judicious interpretation and application of existing protection and the introduction of measures such as pre-patent grant opposition or peer review proceedings would more fairly balance creators and users' rights. Ultimately, it concludes that the most equitable route is for creators to eschew the current forms of IP protection in favour of free and open source software and open business models, which permit innovation sharing, enable viable revenue generation and attribution for creators and enable user access to affordable e-commerce business methods.

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A note on published works

Reference is made in the thesis to four articles which I authored and were published prior to submission of the thesis. These are:

1. Caroline B Ncube 'When are complementary goods similar? *Waterford Wedgwood plc v Assembled Investments (Proprietary) Ltd* (2010) 1 *SALJ* 51 - 58
2. Caroline B Ncube 'Enforcing patent rights against goods in transit: A new threat to trans-border trade in generic medicines' (2009) 21 *SA Merc LJ* 768 – 782
3. Caroline B Ncube 'Protecting business methods in South Africa and Zimbabwe' (2008) 2 *Int J Intellectual Property Management* 1
4. Caroline B Ncube 'Copyright protection of computer programs, computer-generated works and databases in Zimbabwe' *The Journal of Information, Law and Technology (JILT)* 2002 (2)
Available at
<http://www2.warwick.ac.uk/fac/soc/law/elj/jilt/2002_2/ncube>
(last accessed 15 April 2011)

None of these publications are included in the thesis. They are merely used in support of arguments I advance. Material contained in the thesis that has been drawn from these articles is referenced to this effect.

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List of acronyms

ASGI-SA	Accelerated and Shared Growth Initiative for South Africa
ARIPO	African Regional Intellectual Property Organisation
AU	African Union
B&B	bed and breakfast
BC	Berne Convention
BRICS	Brazil, Russia, India, China and South Africa
CC	Creative Commons
CCi	Creative Commons International
CDIP	WIPO Committee on Development and Intellectual Property
CDPA	Copyright, Designs and Patents Act
CPTech	Consumer Project on Technology
CIPRO	Companies and Intellectual Property Registration Office
EC	European Community
EEC	European Economic Community
EPO	European Patent Office
EPC	Convention on the Grant of European Patents
EU	European Union
FDI	Foreign direct investment
FFII	Foundation for a Free Information Infrastructure
FIFA	Fédération Internationale de Football Association
FOSS	free and open source software
FOSSFA	Free Software and Open Source Foundation for Africa
FS	free software
FSF	Free Software Foundation
FTA	free trade agreement
FTISA	Freedom to Innovate South Africa
GATT	General Agreement on Tariffs and Trade
GCIS	Government Communication and Information Service
GDP	gross domestic product
GNP	gross national product
GNU	GNU's Not Unix
HTML	hypertext markup language
ICESCR	International Covenant on Economic, Social and Cultural Rights
ICT	information and communication technologies
ICTSD	International Centre for Trade and Sustainable Development
IMF	International Monetary Fund
IIM	Inter-sessional Intergovernmental Meeting
IP-Australia	Intellectual Property government agency Australia

Intellectual property protection for e-commerce business methods in South Africa: Envisioning an equitable model for SMEs in the tourism industry

IP	intellectual property
IPR	intellectual property rights
IT	information technology
MFN	most favoured nation
NAFTA	North American Free Trade Agreement
NDA	non-disclosure agreement
NEPAD	New Partnership for Africa's Development
NGO	non-governmental organisation
NSEA	National Small Enterprise Act
OECD	Organisation for Economic Co-operation and Development
OSS	open source software
PCT	Patent Co-operation Treaty
PCDA	WIPO Provisional Committee on Proposals Related to a WIPO Development Agenda
PLT	Patent Law Treaty
R&D	research and development
SACU	Southern African Customs Union
SAITIS	South African Information Technology Industry Strategy
SARS	South African Revenue Services
SCP	WIPO Standing Committee on Patents
SEDA	Small Enterprise Development Agency
SME	small and medium sized enterprise
SMS	short message services
SPLT	Substantive Patent Law Treaty
TIDCA	Trade, Investment and Development Co-operative Agreement
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
UCDTAD	United Nations Conference on Trade and Development
UDHR	Universal Declaration of Human Rights
UKIPO	United Kingdom Intellectual Property Office
UI	User Interface
UN	United Nations
UNDP	United Nations Development Programme
USC	United States Code
USPTO	United States Patent and Trademark Office
UTSA	Uniform Trade Secrets Act
WCT	WIPO Copyright Treaty
WIPO	World Intellectual Property Organisation
WPPT	WIPO Performances and Phonograms Treaty
WTO	World Trade Organisation
XML	extensible markup language

Chapter One: Introduction

‘No human domain should be immune from claims of social justice. Intellectual property, like property law, structures social relations and has profound social effects.’¹

This thesis investigates the intellectual property (IP) protection of e-commerce business methods. Its primary focus is to address the question of how this protection should be used to ensure that potential users of e-commerce business methods are not denied access to these methods and to ensure that the creation of new methods is not stifled by inequitable protection.

To facilitate a focused examination, small and medium sized enterprises (SMEs) that provide accommodation in South Africa’s tourism sector (accommodation SMEs) have been selected as this thesis’ focal point. The justification for, and significance of, this sectoral context is presented below (at section 1.4) after the definition of e-commerce business methods and IP (at sections 1.2 - 1.3). Suffice to emphasise, at this juncture, that accommodation SMEs are primarily users of e-commerce business methods developed by others.

¹ Anupam Chander and Madhavi Sunder ‘Is Nozick kicking Rawl’s ass? Intellectual property and social justice’ (2007) 40 *UC Davis Law Review* 563 at 576 (hereafter Chander and Sunder)

Therefore, although this thesis considers the position of creators and users,² its principal perspective is that of users.

Discussions of the IP protection of e-commerce business methods in South Africa have focused on patent protection and the alternative of free and open source software (FOSS).³ This focus creates a knowledge gap as it excludes the discussion of other forms of IP protection. This thesis therefore seeks to fill this deficit in the literature by adopting a

² Graham Dutfield and Uma Suthersanen *Global Intellectual Property Law* (2008) 51 identify the three main stakeholders in IP as 'the author-inventor, the producer-investor and the consumer'. (hereafter Dutfield and Suthersanen *Global Intellectual Property Law*). In this work the author-inventor is referred to as the creator and the consumer as the user. As will be shown at section 1.3 below, the interests of producers and creators are closely aligned. Therefore this thesis subsumes the interests of producers into those of creators.

³ For example see David Sheppard 'Patenting computer software and business methods' in 2001 (Apr) *De Rebus* 28 (hereafter Sheppard 2000), Omphemetse Mooki 'What's lacking in copyright law?' 2001 (June) *De Rebus* 3 (hereafter Mooki), David Sheppard 'Patent protection – Sheppard responds' 2001 (July) *De Rebus* 3 (hereafter Sheppard 2001), Chris de Villiers 'Patentability – look to British and European law' 2001 August) *De Rebus* 3 (hereafter C de Villiers), Shaun Ryan 'To patent or not to patent' 2001 (November) *De Rebus* 24 (hereafter Ryan), E Teljeur (2002) 'Intellectual property rights in South Africa: a review' Available at <http://www.tips.org.za/files/Teljeur_IPRs_paper_2003.PDF> (last accessed 9 March 2011) (hereafter Teljeur), Wendy Rahamim 'Internet and e-commerce patents' in Buys, Reinhardt (ed) *Cyberlaw@SAII: the law of the internet in South Africa* 2ed (2004) 61 – 77 (hereafter Rahamim), Lance Abramson 'Patenting business methods' (March 2006) *Without Prejudice* 25 (hereafter Abramson), APS Van der Merwe 'Business methods, technology and patentability' 2006 *THRHR* 122 (hereafter Van der Merwe), R Jambo 'Intellectual property rights in South Africa: an analysis of IP protection for business methods in the financial services industry' (2006) unpublished research report Graduate School of Business University of Cape Town (hereafter Jambo), Chris de Villiers and Tumelo Tshaya 'Software and business methods patents' (2008) 2 *JILT* Available at <http://www2.warwick.ac.uk/fac/soc/law/elj/jilt/2008_2/devilliersandtshaya/> (last accessed 9 March 2011) (hereafter C de Villiers and Tshaya), Dana van der Merwe 'Patent Law' in Dana van der Merwe (ed) *Information and communications technology law* (2008) 35-59.

composite approach that goes beyond patent law to consider copyright and trade secret protection as well.⁴

1.2 E-commerce business methods

E-commerce business methods are processes employed in operating any aspect of an enterprise, which are implemented partially or wholly by information and communications technologies (ICTs).⁵ This thesis focuses only on computerised business methods that are implemented on the internet and are in fact a subset of application software.⁶ This type of software enables a user to perform certain tasks such as

⁴ For an early version of this approach see Caroline B Ncube 'Protecting business methods in South Africa and Zimbabwe' (2008) 2 *Int J Intellectual Property Management* 1. For another example of a similar approach see Mark Lemley, Peter S Menell, Robert P Merges and Pamela Samuelson *Software and Internet Law* 3 ed (2006) (hereafter Lemley et al *Software and Internet Law*).

⁵ My own definition gleaned from the definitions offered by Bradley Lytle and Philippe Signore 'Finance companies rush to patent business methods' (2004) *Managing Intellectual Property* 35, Bronwyn H Hall (2003) 'Business method patents: innovation and policy' National Bureau of Economic Research (NBER) Working Paper 9717 at 2 (hereafter Hall 'innovation and policy'), SC Glazier *E-patent strategies for software, e-commerce, the Internet, Telecom Services, Financial Services and Business Methods (with case studies and forecasts)* (1999) xi, VM Janich 'Sui generis rights for business methods' (2004) 35 *IIC* 376 at 377.

⁶ James Bessen and Michael J Meurer *Patent Failure: How Judges, Bureaucrats, And Lawyers put Innovators at Risk* (2008) 22 (hereafter Bessen and Meurer *Patent Failure*). There are two basic categories of software namely system software and application software which can be further classified into sub-categories (See Parsons and Oja *New Perspectives on Computer Concepts 2010, Brief*, 12 ed. (2009) 120 and Lemley et al *Software and Internet Law* 12 - 13 .System software is directed at the operation of the computer system for example operating systems and utility programs. Application software is directed at specific end- user tasks for example spreadsheets and word-processors (see C de Villiers and Tshaya).

reserving accommodation or making purchases online.⁷ Due to the primary characterisation of e-commerce business methods as a type of software, it is necessary to provide a detailed definition of software.

Software consists of three elements - the computer program, databases and documentation.⁸ A computer program is a series of instructions which enable a computer to perform a task or achieve a result.⁹ The databases are a reference to the input data (such as customer information and preferences) processed by the computer program to produce the output data (such as a listing of suitable goods or services).¹⁰ The user of software interacts with it through its user interface (UI).¹¹ Examples of documentation include design

⁷ David Bender 'Software protection: the 1985 perspective' (1985) 7 *Western New England Law Review* 405 at 410 (hereafter Bender (1985)). Application programs were defined as follows in *IBCOS Computers Ltd v Barclays Mercantile Highland Finance Ltd* [1994] FSR 275 (ChD) at 285: 'Computers are given so-called "operating systems." These are a kind of basic program concerned with essential computer functions. Popular operating systems are, for instance, MS-DOS, and Unix. There are a number of others. These systems are themselves, when in the computer, in binary code. When an applications program (*i.e.* one which will be used for a particular application) is loaded into the computer it is loaded, as it were, on top of the operating system. The applications program speaks to the operating system which speaks to the computer'.

⁸ Bender (1985) 407. Also see Roux de Villiers 'Computer programs and copyright: the South African perspective' (2006) 123 *SALJ* 315 at 316 (hereafter R de Villiers), Jacqueline D Lipton 'IP's problem child: shifting the paradigms for software protection' (2006) 58 *Hastings LJ* 205 at 218-224 (hereafter Lipton).

⁹ R de Villiers 316, Bender (1985) 407.

¹⁰ R de Villiers 316, Bender (1985) 407.

¹¹ Debbie Stone et al *User Interface Design and Evaluation* (2005) 4 define a UI as 'the part of the computer system with which the user interacts in order to use the system and achieve his or her goal'. There are various types of UIs including graphic UIs which have been defined as 'basically what the user sees on the computer screen as she executes a program' per Lipton 222 .

specifications, flow charts and user manuals.¹² Of these three elements, this thesis focuses on the IP protection of computer programs because the functionality of a business method is encapsulated in the computer program.

It is important, at the outset, to emphasise the dual architecture and nature of computer programs in a 'standard programming scenario'.¹³ Computer programs exist in both human-readable source code and machine-readable object code.¹⁴ The source code is written by a programmer and expresses the 'logical process or algorithm'¹⁵ that the computer will follow to achieve a given result'.¹⁶ It is written in various programming languages for example C, C++, Cobol, Fortran, Java, Perl, PHP, Python and Tcl/Tk. Source code can be translated easily from one programming language to another and can also be reduced into pure mathematical functions.¹⁷ The source code is compiled or converted into object code which can then be executed by

¹² Lee- Ann Tong 'Authorship of computer programs under the South African copyright law' (2005) 122 *SALJ* 513 at 513 (hereafter Tong (2005)).

¹³ *Silvaco Data Systems v Intel Corporation* 184 Cal. App.4th 210 at 217 note 4.

¹⁴ Laurence Diver 'Would the current ambiguities within the legal protection of software be solved by the creation of a sui generis property right for computer programs?' (2008) 3 *Journal of Intellectual Property Law & Practice* 125 (hereafter Diver), Lipton 219 - 222.

¹⁵ Bender (1985) 409 note 5: 'An algorithm is a rigidly defined, step-by-step procedure for solving a particular problem in a finite number of steps. The algorithm yields a solution to the particular problem under all circumstances'.

¹⁶ Diver 125 - 126.

¹⁷ Klemens *Math You Can't Use: Patents, Copyright and Software* (2006) 26.

the computer.¹⁸ Object code may be ‘represented as text but the text is not readily intelligible to human beings consisting of strings of binary (base 2) numbers’.¹⁹ It is worth noting that with the necessary expertise it is possible to comprehend object code, however only a small percentage of the general populace has this expertise. Object code is functional²⁰ because its execution causes a computer to behave²¹ or act in particular way.

Computer programs simultaneously contain expressive/textual and functional/behavioural elements, making them anomalous ‘within the traditional legal framework, since endeavours are usually classified strictly as either expressive or functional and then protected as such’.²² The manner in which IP law strives to contend with this unique characteristic of computer programs and the public interest issues it raises is the subject of Chapters Three to Five.

¹⁸ Diver 126.

¹⁹ *Silvaco Data Systems v Intel Corporation* at 217.

²⁰ Diver 126, Lemley et al *Software & Internet Law* 19.

²¹ Pamela Samuelson et al ‘A manifesto concerning the legal protection of computer programs’ (1994) 94 *Columbia Law Review* 2308 at 2316 - 2317

²² Diver 126. For a similar characterisation see David Bender ‘The more things change, the more they stay the same: an unhurried reflection on software protection over the years’ (1990) 16 *Rutgers Computer & Technology Law Journal* 309 at 313 (hereafter Bender (1990)), Robert J Tomkowicz ‘Uneasy Fit: Software patents and the duty of disclosure in Patent Law’ (2010) 25(2) *Canadian Intellectual Property Review* 221 at 227. Available at <<http://ssrn.com/abstract=1681644>> (last accessed 15 April 2011) (hereafter Tomkowicz) and Rosa Maria Ballardini ‘Scope of IP protection for the functional elements of software’ in Niklas Bruun (ed) *In Search of New IP Regimes* (2010) 27 at 3 – 4. Available at <<http://ssrn.com/abstract=1599607>> (last accessed 15 April 2011) (Ballardini). The page numbering used is that of the SSRN copy.

Chapter 2 probes e-commerce business methods further by explaining their relationship to business models and strategies and providing details of the typical e-commerce business method employed by an accommodation SME.

1.3 Intellectual property

This section gives a very broad overview of IP law. It merely defines IP and introduces the various types of IP protection. Patents, copyright and trade secrets are comprehensively discussed in Chapters Three, Four and Five respectively.

IP law seeks to protect IP rights (IPRs) which are 'legal and institutional devices that protect creations of the mind such as inventions, works of art and literature, and designs'.²³ IPRs may be divided into the two main categories of (1) industrial property and (2) copyright and related rights. Industrial property entails the protection provided by patents, trademarks, industrial designs, plant breeders' rights and geographical indications. It also includes the protection of utility models, trade dress and layout designs or topographies of integrated circuits and protection against unfair competition,

²³ Graham Dutfield (2003) *Intellectual Property Rights and the Life Science Industries: A Twentieth Century History* 1 (hereafter Dutfield *IPRs and the Life Sciences Industries*). See p25 of the same text for an explanation of the institutional nature of IPRs. For a similar definition see K Henderson and H Kane, 'Internet patents: will they hinder the development of e-commerce?' 2001(1) *JILT* Available at < http://www2.warwick.ac.uk/fac/soc/law/elj/jilt/2001_1/henderson > (last accessed 3 March 2011).

including the protection of trade secrets.²⁴ Of these, patents, trademarks and trade secrets are relevant to this thesis.

Copyright protects the original expression of ideas that has been reduced to fixed form provided the creator of the work is qualified or eligible for protection in that jurisdiction. Related rights relate to performance and similar depictions of work. In this category, this thesis is concerned only with copyright. Table 1 below summarises the subject matter, form and extent of application of IPRs.

Category	Protection	Subject matter
Industrial property	Patents	New, non-obvious inventions capable of industrial application
	Trademarks	Signs or symbols capable of distinguishing goods or services
	Trade Secrets	Confidential information
	Industrial designs	Functional & aesthetic designs
Sui generis protection	Plant breeders rights	New, stable, homogenous, distinguishable plant varieties
	Database protection ²⁵	Electronic databases
	Integrated circuits	Original layout of semi-conductors
Copyright and related rights	Copyright	Original works of authorship in material form created by qualified persons

Table 1: Summary of IPRs²⁶

²⁴ WIPO (2003) 'Understanding how IP relates to E-commerce' Available at < http://www.wipo.int/sme/en/e_commerce/ip_ecommerce.htm> (last accessed 3 March 2011).

²⁵ In some jurisdictions such as South Africa, databases are protected by copyright law.

²⁶ Adapted from CA Primo Braga *et al* 'Intellectual Property Rights and Economic Development' World Bank Discussion Paper 412 (2000) 4.

1.3.1 Inherent tensions

IP is fraught with tension because it seeks to simultaneously address the position of three distinct constituents namely the creators or owners, the producers and the users of IP. The creators of IP can generally be said to desire full control of their IP and therefore seek to obtain maximalistic IP protection. Their main needs are for ‘recognition, respect and remuneration’.²⁷ The producers of IP, who commercialise creators’ works, seek enforceable protection for IP and competitive markets that will enable them to recoup their investment.²⁸ Like creators, producers favour maximalist protection. Due to this affinity in needs and preferences between creators and producers, this thesis will subsume the interests of producers into those of creators and will henceforth refer only to creators. On the other hand, the users of IP’s main needs are ‘access to and affordability of scientific and cultural technology.’²⁹ Consequently, they seek to avoid undue restrictions on their usage of the IP concerned and generally prefer minimalistic IP protection. In other words they prefer little or no protection at all.

Further tension is evident in national approaches to the patenting of software and e-commerce business methods, as will be shown in Chapter Three. This tension exists on two levels. On the first level are

²⁷ Dutfield and Suthersanen *Global Intellectual Property Law* 52.

²⁸ Ibid.

²⁹ Ibid.

the differences between jurisdictions and on the second level, there are also differences between different courts within the same jurisdiction. For example in the United States the Federal Circuit Court used the liberal 'machine or transformation test' to determine patentability which has been faulted by the Supreme Court which has held that this test is not the sole determinant of patentability.³⁰ However, as a lower court, the Federal Circuit Court is bound by the decisions of the Supreme Court. This uncertainty is in marked contrast to the stability with regard to the patenting of inventions in other fields of technology such as pharmaceutical compositions. There are two reasons for this distinction between the patenting of e-commerce business methods and the patenting of pharmaceutical compositions. First, the abstract nature of e-commerce business methods makes them highly contestable. Secondly, the lack of international consensus with regard to e-commerce business method patents has led to the varying

³⁰ Robert M Masters and Brock S Weber 'Intellectual property cases and trends to follow' 2009) *Intell. Prop. & Tech. L.J.* 14 at 15-16, Lois Matelan 'The continuing controversy over business methods patents' (2007) *Fordham Intell Prop Media & Ent LJ* 189 at 213-214, Scott D Locke and William D Schmidt 'Business method patents: the challenge of coping with an ever changing standard of patentability' (2007-2008) 18 *Fordham Intellectual Property Media & Entertainment L.J.* 1079, *In re Bilski* 545 F.3d 943 (Fed. Cir. 2008) *Bilski et al v Kappos* 130 S.Ct. 3218 (Supreme Court, 2010).

national approaches. In contrast some international consensus has been reached with regard to pharmaceutical patents.³¹

The competing interests of creators and users of e-commerce business methods and the uncertainties relating to the patenting of these methods require a carefully balanced solution premised on equitable IP which provides a framework within which to calibrate the appropriateness of available protection. Section 1.5 below outlines such a model of equitable IP.

1.4 Sectoral Context

Although e-commerce business methods are ubiquitous,³² accommodation SMEs in the tourism sector are a worthy focal point of reference for this work for the following reasons. Tourism is one of

³¹ A discussion of pharmaceutical patents is beyond the scope of this thesis. For such discussion see Duncan Matthews 'WTO Decision on implementation of paragraph 6 of the Doha Declaration on the TRIPS Agreement and public health: A solution to the access to essential medicines problem?' (2004) 7 *Journal of International Economic Law* 73 at 88-92 (hereafter Matthews), Frederick M Abbott 'The WTO medicines decision: World pharmaceutical trade and the protection of public health' (2005) 99 *American Journal of International Law* 317 at 338 (hereafter Abbot), Peter Drahos 'Four lessons for developing countries from the trade negotiations over access to medicines' (2007) 28 *Liverpool LR* 11 at 12-3, Frederick M Abbott & Jerome H Reichman 'The Doha Round's public health legacy: Strategies for the production and diffusion of patented medicines under the amended TRIPS provisions' (2007) 10 *Journal of International Economic Law* 921 (hereafter Abbot & Reichman), Caroline B Ncube 'Enforcing patent rights against goods in transit: A new threat to trans-border trade in generic medicines' (2009) 21 *SA Merc LJ* 768-782 (hereafter Ncube 2009).

³² Ben Klemens 'The rise of the information processing patent' (2008) *Boston University Journal of Science and Technology Law* 1 at 1: 'On the economic front, there is no self contained information processing industry: every business in every field uses software and business methods.' (hereafter Klemens 'information processing patent'). Also see Bender (1985) 407.

South Africa's immediate priority sectors³³ and has been flagged as an industry to which ICTs and e-commerce can bring significant benefits.³⁴ It makes significant contributions to South Africa's gross domestic product (GDP). It contributed 8.3% to GDP in 2006 which is forecast to increase to 12% by 2014.³⁵ A large portion of this contribution can be attributed to the accommodation sub-sector which is arguably the most important sector of tourism as each tourist will require accommodation but may forego services offered by other sectors.³⁶ This significance is borne out by statistics, for example 9 090 000 international travellers visited South Africa in 2007 generating US\$ 8 418 million in receipts.³⁷ Generally it is accepted that SMEs are significant drivers of economic growth through contributions to GDP,

³³ Christian M Rogerson 'Tracking SMME research in South Africa's priority sectors' (2008) 11 *SAJEMS NS* 54 at 54 citing Department of Trade and Industry (DTI) *A Growing Economy that Benefits All: Accelerated & Shared Growth Initiative for South Africa (ASGI-SA): Discussion Document* (2005) and DTI *A National Industrial Policy Framework* (2006), The Presidency of South Africa *ASGISA 2007 Annual Report* 55, S Gardyne, TR Hill and EL Nel 'Tourism promotion as a local government response to poverty: Ingwe Municipality, KwaZulu-Natal, South Africa' (2005) 35 *Africa Insight* 121 at 123.

³⁴ SEDA (2007) *Small Enterprise as Users and Suppliers of Information on the ICT Sector* 15.

³⁵ Government Communication and Information Service (GCIS) *South Africa Yearbook 2007/08* at 524.

³⁶ Gary Phillips and Jay Govender *Overview of the South African Tourism and Hospitality Sector*, Trade Union Research Project, University of Natal 2001 at 5 (hereafter Phillips and Govender).

³⁷ World Economic Forum *The Travel & Tourism Competitiveness Report 2009* 334.

the alleviation of poverty and the provision of employment.³⁸ It is therefore reasonable to assume that accommodation SMEs make a meaningful and important contribution to South Africa's economy. Accommodation SMEs that target international travellers are heavily reliant on e-commerce and therefore e-commerce business methods are particularly important to them, making them an ideal constituency for this thesis. In view of the economic significance of accommodation SMEs, the impact of IP protection of e-commerce business methods on accommodation SMEs is worthy of sustained study because inappropriate protection will have potentially devastating effects on the growth of these SMEs, the tourist sector and ultimately the national economy. A fuller description of accommodation and other SMEs and the tourism industry is given in Chapter Two (at sections 2.1 - 2.2).

³⁸ Small Enterprise Development Agency (SEDA) *Review of Trends on Entrepreneurship and the Contribution of Small Enterprises to the Economy of South Africa 2000 - 2006* (2007) 20 - 21 (hereafter SEDA (2007) *Trends*), Christoph Stork and Steve Esselaar (eds) *Towards an African e-index of SME e-Access and Usage across 14 African Countries* (2006) 51 (hereafter Stork and Esselaar *African e-index*), Task Group of the Policy Board for Financial Services and Regulation (2001) *SMES' access to finance in South Africa – A supply-side regulatory review* 43 – 44 Available at <<http://www.treasury.gov.za/publications/other/default.aspx>> (last accessed 10 March 2011), Anna Kesper 'Failing or not aiming to grow? SMMEs and their contribution to employment growth in South Africa' TIPS Working Paper 15_2000 at 4, Al Berry et al *The economics of SMMEs in South Africa* 4 Available at <<http://www.edgegrowth.com/Portals/0/Documents/Seminal%20Docs/THE%20ECONOMICS%20OF%20SMMES%20IN%20SOUTH%20AFRICA.pdf>> (last accessed 10 March 2011), Asmelash Beyene 'Enhancing competitiveness and productivity of small and medium scale enterprises (SMEs) in Africa: an analysis of differential roles of national governments through improved support services' (2002) 27 *Africa Development* 130 at 131.

It is important to demonstrate conceptually and, if possible, empirically, how inequitable IP protection for e-commerce business methods in South Africa could harm accommodation SMEs. Due to limited empirical studies on this point, the following section demonstrates this potential harm primarily conceptually.

1.4.1 Potential harm to accommodation SMEs

A detailed overview of the e-commerce activities of accommodation SMEs is presented in Chapter Two (at sections 2.3 - 2.4). A recent comprehensive doctoral study into e-commerce adoption by tourism organisations in South Africa, Kenya and Zimbabwe by Tonderai Maswera³⁹ established that there is fledgling uptake of e-commerce amongst accommodation providers.⁴⁰ The study also established that only 46% of the 370 tourism establishment websites surveyed were fully functional and had online reservation and payment facilities.⁴¹ Accommodation establishments fared better, 72% of the 122 hotel and lodge websites surveyed had online reservation facilities.⁴² Of these, only 31% had credit card online payment facilities.⁴³ 50% of the

³⁹ Tonderai D Maswera 'E-commerce in the travel and tourism industry in Sub-Saharan Africa' PhD thesis Loughborough University (2006) (hereafter 'Maswera PhD thesis') Available at < <http://hdl.handle.net/2134/7826> > (last accessed 10 March 2011). This study was based on three online surveys of a total of 373 websites of tourism enterprises in South Africa, Kenya, Uganda and Zimbabwe and three questionnaires sent to these enterprises.

⁴⁰ Tonderai Maswera, Ray Dawson and Janet Edwards 'E-commerce adoption of travel and tourism organisations in South Africa, Kenya, Zimbabwe and Uganda' (2008) 25(3) *Telematics and Informatics* 187 (hereafter Maswera et al 2008).

⁴¹ Maswera et al 2008 198.

⁴² Maswera et al 2008 195.

⁴³ Ibid.

surveyed accommodation establishments were South African⁴⁴ and Maswera notes that a majority of these were SMEs.⁴⁵ Therefore Maswera has established that only a few accommodation SMEs in South Africa have adopted e-commerce and, amongst those, only a small percentage has fully functional e-commerce websites with both reservation and payment facilities.

This thesis postulates that, among other factors, one reason for the limited uptake of e-commerce by accommodation SMEs and the limited prevalence of full functionality for these websites may be that critical e-commerce business methods are inaccessible due to inequitable IP protection.

Numerous empirical studies have shown that the institutional legal framework in which an enterprise operates may create a barrier to the

⁴⁴ Maswera et al 2008 195, Table 3: the figures for the sample size are indicated as follows: South Africa – 61, Kenya – 39, Zimbabwe – 11, Uganda – 11.

⁴⁵ Maswera PhD thesis 16.

usage of e-commerce.⁴⁶ On this basis, this thesis argues that accommodation SMEs' strategic choices are constrained by institutional legal frameworks.⁴⁷ Consequently, they will not adopt e-commerce unless there is a good probability that they will be successful. The full potential of e-commerce can be unlocked only by using efficient e-commerce business methods. Accommodation SMEs are therefore likely to adopt e-commerce only when they are assured that they will be able to use the business methods of their choice unhindered by patent or copyright infringement or trade secret misappropriation claims or in terms of equitable license agreements

⁴⁶ Phillip Esselar & Jonathan D Miller 'Towards electronic commerce in Africa: A perspective from three country studies' (2001) *Southern African Journal of Information and Communication* 2, Joanne E Oxley & Bernard Yeung 'E-commerce readiness: Institutional environment and international competitiveness' (2001) 32 *Journal of International Business Studies* 705, Eric Cloete 'SMEs in South Africa: Acceptance and adoption of e-commerce' (2002) 10 *Electronic Journal of Information Systems in Developing Countries* 1, Gordian Ndubizu & Bay Arinze 'Legal determinants of the global spread of e-commerce' (2002) 22(3) *International Journal of Information Management* 181, Jennifer L Gibbs & Kenneth L Kraemer 'A cross-country investigation of the determinants of scope of e-commerce use: An institutional approach' (2004) 14 *Electronic Markets* 124, Sean Xu, Kevin Zhu & Jennifer L Gibbs 'Global technology, local adoption: A cross-country investigation of internet adoption by companies in the United States and China' (2004) 14 *Electronic Markets* 13, Chuan -Fong Shih, Jason Dedrick & Kenneth L Kraemer 'Rule of law and the international diffusion of e-commerce' (2005) 48(11) *Association for Computing Machinery Communications of the ACM* 57, Mahesha Kapurubandara & Robyn Lawson 'Barriers to adopting ICT and e-commerce with SMEs in developing countries: An exploratory study in Sri Lanka' (2006) *Proceedings of the Conference of COLLECTeR* 1, Kevin Zhu & Kenneth L Kraemer 'Post-adoption variations in usage and value of e-commerce by organizations: Cross country evidence from the retail industry' (2005) 16 *Information Systems Research* 61, Candace A Martinez & Christopher Williams 'National institutions, entrepreneurship and global ICT adoption: A cross-country test of competing theories' (2010) 11(1) *Journal of Electronic Commerce Research* 73.

⁴⁷ Mike W Peng, Sunny Li Sun, Brian Pinkham & Hao Chen 'The institution based view as a third leg for a strategy tripod' (2009) 23 *Academy of Management Perspectives* 63 at 67.

with right-holders in the e-commerce business method. The accessibility of e-commerce business methods, as dictated by IP laws therefore becomes of paramount importance as it will be a decisive factor in an accommodation SME's selection of its e-commerce business strategy, model and methods.

As will be shown in Chapter Two, accommodation SMEs that use e-commerce are primarily users (and not creators) of e-commerce business methods. Where they have their own websites, they rely on methods created by others which they either purchase off the shelf or commission. A few accommodation SMEs may have the capacity and resources to create their own e-commerce business methods. Where they use portals owned by others, the owners of the portal are in precisely the same position as the SMEs who own websites and have to create, purchase or commission the necessary methods. This means that the impact of IP protection on the third parties who develop methods (creators) will indirectly affect accommodation SMEs due to their reliance on the use of methods created by others whether they use a third party portal or own a website. Such impact will be direct, where an accommodation SME creates its own methods. Therefore, whilst accommodation SMEs are primarily users, arguments about the position of creators of methods are of great significance, hence their inclusion in this thesis.

The main issue raised by off the shelf purchases and the commissioning of e-commerce business methods is affordability and ultimately access. Prices of these methods may be high due to inequitable IP protection as argued at sections 3.3.2, 4.4.2 and 5.3.2 below. In brief, the incompatibility of IP protection with programming practices makes it more costly and inefficient to produce methods resulting in expensive packaged methods or high charges being levied for commissioned methods.⁴⁸ This would be to the detriment of users, such as accommodation SMEs because it may render essential e-commerce business methods inaccessible to them due to unaffordability. From a creator's perspective the main concern is that the inequitable IP protection of existing methods may preclude the development of similar or functionally equivalent methods by the SME and others.

If an accommodation SME, as a user, cannot obtain a license or is embroiled in a dispute pertaining to license rights, and chooses to ignore the IP protection and use the method anyway, it is likely to face

⁴⁸ It is difficult to establish the prices that are charged for commissioned methods as these are contained in confidential contractual documents.

blistering infringement litigation at prohibitive costs.⁴⁹ Moreover, even in circumstances where the threat of such litigation, and its attendant costs is minimal, the mere existence of the threat is likely to serve as a deterrent to accommodation SMEs. The same situation will prevail if the SME is a creator and chooses to copy protected aspects of the method in issue.

As will be shown in Chapter Four, copyright protection does not extend to functional aspects. Therefore it is permissible for a creator to design a functionally equivalent method without being guilty of copyright infringement. However, there is no South African case law on non-literal copying and it would be risky for a creator to develop a workaround due to the legal uncertainty. It is not possible to predict what the likely South African position will be as South Africa does not protect computer programs as literary works like other jurisdictions.

⁴⁹ Judith McNamara and Lucy Craddock 'Can we protect how we do what we do? A consideration of business method patents in Australia and Europe' (2008) 16 *International Journal of Law and Information Technology* 96 at 114 (hereafter McNamara and Craddock). I was unable to locate literature detailing costs of IP litigation in South Africa. However, it is generally accepted that IP litigation is very expensive. I was unable to gather new empirical evidence because the exact amounts paid by litigants to their legal representatives is difficult to determine. It is contained in confidential correspondence between attorneys and their clients. It is also sometimes available in court files, where costs have been awarded and taxed. However, access to such files requires physical attendance at the Registrar's offices of the courts that hear IP matters (seated in various provinces across the country). With the limited resources at my disposal, I was unable to undertake such a data collection task.

The combined effect of the unaffordability/inaccessibility of existing methods, the preclusion of the creation of substitutable methods by the SME or other creators and the legal uncertainty with regard to non-literal copying may effectively preclude an accommodation SME from entering the South African tourism market. As argued below at section 1.5 (b) such exclusion may be in breach of the proprietor(s) of the SME's constitutional right to choose a trade, occupation or profession.⁵⁰ Further, considering the national objective of promoting the growth of small businesses, such a situation would also be against the public interest and government policy.

Therefore, section 1.5 below argues for an equitable IP model, which will be used to evaluate the appropriateness of the IP protection currently extended to e-commerce business methods.

1.4.2 Possible generalisation to other industries and the economy

Although this thesis focuses on a specific constituency, the accommodation SME in South Africa, it is important, at the outset, to consider the possible generalisation of the thesis' main claims to other South African industries and to other countries.

The case for an equitable IP regulatory scheme for accommodation SMEs in South Africa is made from within a stakeholder analysis

⁵⁰ Section 22 Constitution of South Africa, 1996. For an overview of this right see Dennis Davis 'Economic activity' in S Woolman, T Roux and M Bishop *Constitutional Constitutional law of South Africa* – 2 ed loose-leaf (1996 revision service 1998) 29-15 - 29-19.

making it possible to generalise arguments to creators and users of e-commerce business methods in other industries and countries to a limited extent. The generalisation will be limited by the fact that there are industry specific nuances that have to be taken into account. Further, certain stakeholder characteristics such as size, capacity and access to financial resources are also important. Finally, the jurisdiction within which the user or creator operates is also significant as it will determine applicable laws as well the socio-economic environment within which that stakeholder subsists. As shown in section 1.5 below, South Africa's status as a developing country makes it possible to advance certain arguments in support of 'equitable IP' which may not carry as much weight in a developed country.

1.5 IP, e-commerce business methods and SMEs – in search of equity⁵¹

*'IP rights- especially patents- are tools for economic advancement that should contribute to the enrichment of society through (i) the widest possible availability of new and useful goods, services and technical information that derive from inventive activity, and (ii) the highest possible level of economic activity based on the production, circulation and further development of such goods, services and information.'*⁵²

This section does not purport to provide a comprehensive theory of IP because this is a nearly insurmountable task that is both inappropriate and unnecessary for present purposes. Not even a

⁵¹ This title is inspired by Susette Biber-Klemm's article 'Biotechnology and traditional knowledge: in search of equity' 2000 *International Journal of Biotechnology* 85.

⁵² Dutfield *IPRs and the Life Science Industries* 27.

leading text on the theory and philosophy of IP,⁵³ attempts to do this. The section merely constructs a nuanced framework⁵⁴ to be used to evaluate the appropriateness of IP protection for e-commerce business methods in South Africa. This framework is based on three legs namely instrumentalism, the public interest and the constitutional right to right to choose a trade, occupation or profession, and is easily depicted as a tripod as shown below.

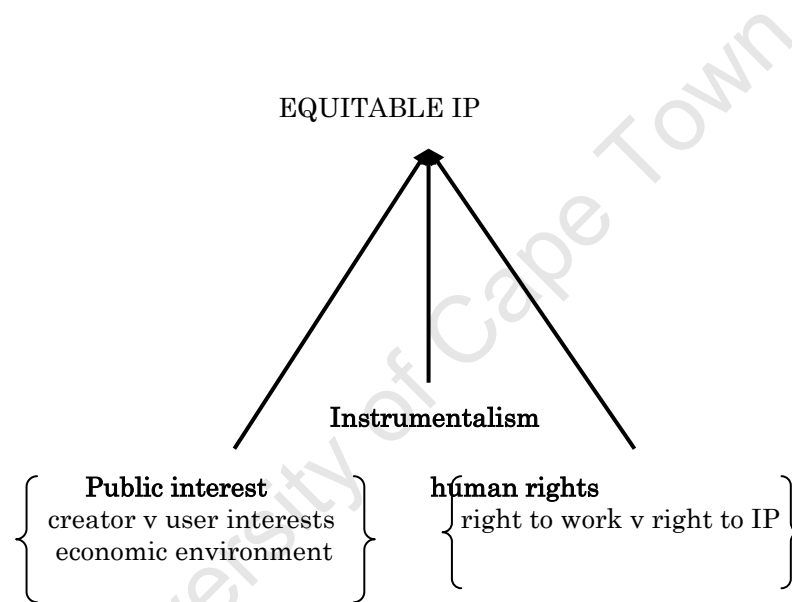


Figure 1: Equitable IP Tripod

The first leg of the tripod is its underlying instrumentalist worldview which rejects the elevation of property rights above all other rights and advocates for property rights that serve moral values and seek the

⁵³ Peter Drahos (1999) *A philosophy of intellectual property* (hereafter Drahos *Philosophy*).

⁵⁴ As recommended by N Elkin-Koren and EM Salzberger (2004) *Law, economics and Cyberspace: The Effects of Cyberspace on the Economic Analysis of Law* 5: ‘the uncritical use of a conventional analytical framework runs the risk of producing a distorted view on both positive and normative level’.

‘improvement of human conditions and experience’.⁵⁵ Instrumentalism is in stark contrast to proprietarianism and universalism that prioritise property rights held by creators or owners over the rights held by users or society generally, on the national and international sphere respectively.⁵⁶ Building on the basis of instrumentalism, this thesis contends that in order to more equitably balance the contesting rights of the creators and users of e-commerce business methods, IPRs should be formulated and enforced so as to meet societal goals⁵⁷ or the public interest, be responsive to the economic environment and take cognisance of the human rights claims of both creators and users. Each of these strands is discussed in turn below.

(a) Public interest

The public interest approach to IP seeks to equitably balance the interests of creators and users in a manner that is beneficial to society generally. This approach is promoted by developmental agencies⁵⁸

⁵⁵ Drahos *Philosophy* 215.

⁵⁶ Drahos *Philosophy* 200 – 202, Dutfield *IPRs and the Life Science Industries* 1, Peter Drahos ‘Death of a patent system- introduction’ in Peter Drahos ed *Death of Patents* (2005) 3 - 8 (Hereafter Drahos *Death*).

⁵⁷ Fisher, William ‘Theories of IP’ in Stephen Munzer (ed) *New Essays in the Legal and Political Theory of Property* (2001) 168 (hereafter Fisher ‘Theories of IP’) at 172.

⁵⁸ For example the United Nations, in its UN Human Development Report 2001, stated that the fair use of IPRs is essential if developing nations are to meaningfully participate in e-commerce and achieve economic development. See United Nations *Human development report 2001* at 7.

and is evident in their strategic decisions⁵⁹ and in the international agreements they administer. For example, the Agreement on Trade Related Aspects of Intellectual Property Rights, including trade in Counterfeit Goods (TRIPS)⁶⁰ art 7 provides:

‘The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the *mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations.*’ (My emphasis)

This provision takes clear cognisance of the competing interests of producers and users of technological knowledge and calls for an equitable balancing of these interests. This position is reinforced by art 8(1) which in part provides:

‘Members may, in formulating or amending their laws and regulations, adopt measures necessary ... *to promote the public interest in sectors of vital importance to their socio-economic and technological development*, provided that such measures are consistent with the provisions of this Agreement.’ (My emphasis)

This provision is particularly significant because it acknowledges that IP laws ought to be formulated so as to promote socio-economic goals. Therefore it is inappropriate to take a one-size fits all approach to IP laws as each jurisdictions socio-economic status and developmental goals have to be taken into account. This aspect is further discussed at section 1.5 (c) below.

⁵⁹ For instance the World Intellectual Property Organisation (WIPO)’s adoption of the Development Agenda is a clear instance of strategy that is influenced by the public interest. See Jeremy de Beer ‘Defining WIPO’s development agenda’ in Jeremy de Beer (ed) *Implementing the World Intellectual Property Organisation’s Development Agenda* (2009) 2 - 3 (hereafter de Beer ‘Defining WIPO’).

⁶⁰ Agreement on Trade-Related aspects of Intellectual Property Rights including Trade in Counterfeit Goods, Marrakesh Agreement Establishing the World Trade Organisation, Annex 1C, 33 ILM 1125, 1197 (hereafter TRIPS or TRIPS Agreement).

The public interest approach also finds support from academics⁶¹ and activists.⁶² In view of such support, it has been adopted as suitable framework for this thesis. However, to create a sound framework, it is necessary to anticipate criticisms of the public interest approach and to take them into account in the construction of an equitable IP model.

A criticism that has been levelled against the public interest approach is that it is unclear or contested which social ends are to be met by IP laws.⁶³ In those instances where theorists venture to recommend the social ends to be met by IP laws, they are accused of being paternalistic because they seek to prescribe what would be good for people.⁶⁴ However, it seems that these accusations are countered by the fact that the selection of societal ends is essentially a democratic issue in that IP laws should serve the goals which a particular nation has set itself through its legislative and executive processes⁶⁵ and as clarified through case law.⁶⁶ Accordingly, this thesis looks to South African government policies to ascertain the 'good' to be attained.

⁶¹ For example, it is supported by the authors of the Adelphi Charter on *on Creativity, Innovation and Intellectual Property (Adelphi Charter)* a cohort of leading academics and experts in various sectors. See Royal Society of Arts (RSA) *Promoting Innovation and Rewarding Creativity: A Balanced Intellectual Property Framework for the Digital Age (2006)* 4-5. The Adelphi Charter is appended to the thesis as Appendix 3.

⁶² Chander and Sunder 564: 'From Doha to Geneva, from Rio de Janeiro to Ahmedabad, from Palo Alto to New Haven, from Davis to Copenhagen, individuals and groups insist the intellectual property must serve a broad array of human ends'.

⁶³ Fisher 'Theories of IP' 193, Chander and Sunder 576.

⁶⁴ Fisher 'Theories of IP' 152.

⁶⁵ Chander and Sunder 577.

⁶⁶ Chander and Sunder *ibid.*

One of South Africa's key strategies is the encouragement of economic development through commercial enterprise by the provision of an enabling legal environment.⁶⁷ As already stated, tourism is one of South Africa's priority sectors and there is substantial government support for enterprises in this sector.⁶⁸ Special cognisance has been taken of the contribution of SMEs to economic development and the government has committed itself to a similar goal with regard to promoting local SMEs.⁶⁹ The sum effect of these government policies is the prioritisation of the creation of an enabling legal environment for accommodation SMEs.⁷⁰ Therefore the IP protection of e-commerce business methods should not hinder entrepreneurial growth of accommodation SMEs and ought to encourage it, in compliance with these stated national goals.

It is important to highlight that the public interest can be argued from a creator's perspective and also from a user's perspective, raising the

⁶⁷ For example in Department of Trade and Industry (DTI) *South African company law for the 21st century: guidelines for corporate law reform* (2004) GG 26493 of 23 June 2004 at 5, The Presidency Republic of South Africa *Development Indicators (2008)* 80.

⁶⁸ For example see Department of Environmental Affairs and Tourism *White Paper on tourism* (1996) Available at <<http://www.info.gov.za/whitepapers/1996/tourism.htm>> (last accessed 12 March 2011).

⁶⁹ DTI *Integrated strategy on the promotion of entrepreneurship and small enterprises: unlocking the potential of South African entrepreneurs* (2005) 3, DTI *White paper on small business: national strategy for the development and promotion of small business in South Africa* (1995), SA Government Information (2008) Apex Priorities (annexure to the 2008 State of the Nation Speech) available at <<http://www.info.gov.za/speeches/son/index.html>> (last accessed 12 March 2011).

⁷⁰ Melville Saayman & Esti Olivier 'An analysis of tourism SMEs in South Africa' (2005) 27(1) *South African Journal for Research in Sport, Physical Education and Recreation* 117 at 118.

question of which interests are paramount. It is thus necessary to devise means by which these contesting claims can be balanced. This thesis uses the twin pillars of human rights and socio-economic conditions to attempt to break the deadlock between creators and users' interests. The use of these pillars finds support in articles 7 and 8 of TRIPS for two reasons. First, these two articles have been interpreted as establishing 'a human rights mandate' for TRIPS member states because to their close alignment with international human rights legislation.⁷¹ Secondly, the text of the articles makes express reference to economic welfare and development. Each pillar is discussed below.

(b) Human Rights

The public interest approach is considerably strengthened by the incorporation of a human rights perspective which breaks the deadlock between contesting visions for IP protection if it is properly deployed. Care needs to be taken with the use of human rights narratives because they can be used both in favour of expanding IP rights (in the interests of creators of IP) and against such expansion (in the interests

⁷¹ Dutfield and Suthersanen *Global Intellectual Property Law* 223.

of users).⁷² The proper deployment of this narrative is to use it as a bottom-line or ‘baseline’ for human rights goals then work backwards to establish how IP law can be used to achieve those goals.⁷³ It is thus necessary find this baseline by looking to South Africa’s constitution⁷⁴ and to international obligations by which the country is bound.

(i) Right to IP

The South African constitution does not provide for the right to IP as a human right. It has been argued that it should have provided for such a right following art 15 of the ICESCR.⁷⁵ Although South Africa has

⁷² Chander and Sunder 577, Lawrence R Helfer ‘Towards a human rights framework for intellectual property’ (2007) 40 *UC Davis LR* 971 at 1015-1020 (hereafter Helfer ‘Human rights framework’), Okediji, Ruth L ‘Narratives of developing country participation in the global intellectual property system’ (2003) 7 *Singapore J of International and Comparative Law* 315 at 353 writes ‘Uncritically deployed, the HR narrative continues the rationalization of the imperial/colonial ages as a necessity to “civilize” non European societies. Specifically, it affirms the premise that developing countries lag behind economically because of their failure to develop institutions of private property and the rule of law, and to protect these “indispensable ingredients” as human rights guarantees, effected through liberal trade and competition laws’. (hereafter Okediji ‘Narratives’), Hector L MacQueen et al *Contemporary intellectual property: law and policy* (2007) para 10.19.

⁷³ Helfer ‘Human rights framework’ 1018, Audrey R Chapman ‘The human rights implications of intellectual property protection’ (2002) *Journal of International Economic Law* 861 at 873-879, Amanda Barrat *The Battle for Policy Space: Strategic Advantages of a Human Rights Approach in International Intellectual Property Negotiations* (2008) Unpublished PhD thesis University of Cape Town at 6-7, 294-303 (hereafter Barrat).

⁷⁴ Constitution of the Republic of South Africa, 1996.

⁷⁵ OH Dean *Handbook of South African copyright law* (loose-leaf) (1987 last revised 2006) 1-2A (hereafter Dean *Copyright*), Art 15 ICESCR provides-

1. The States Parties to the present Covenant recognize the right of everyone:
 - (a) To take part in cultural life,
 - (b) To enjoy the benefits of scientific progress and its applications,
 - (c) To benefit from the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author.

ratified the ICESCR, its provisions cannot be enforced by private individuals unless they are incorporated into domestic legislation.⁷⁶ An attempt was made to provide for a right to IP in the constitution but it failed and the Constitutional Court held that the right to have IP protection is not a fundamental right.⁷⁷ The South African position is in marked contrast to the United States' position where article 1(8) of the United States Constitution expressly provides for IP protection. Scholars have thus been able to debate the constitutionality of patenting e-commerce business methods in the United States on the basis of whether or not those patents promote the progress of science and the arts.⁷⁸

2. The steps to be taken by the States Parties to the present Covenant to achieve the full realization of this right shall include those necessary for the conservation, the development and the diffusion of science and culture.

3. The States Parties to the present Covenant undertake to respect the freedom indispensable for scientific research and creative activity.

4. The States Parties to the present Covenant recognize the benefits to be derived from the encouragement and development of international contacts and co-operation in the scientific and cultural fields.

⁷⁶ See s 231(4) of the SA Constitution which provides –
'Any international agreement becomes law in the Republic when it is enacted into law by national legislation, but a self-executing provision of an agreement that has been approved by Parliament is law in the Republic unless it is inconsistent with the Constitution or an Act of Parliament',
Azapo & Others v The President of the Republic of South Africa 1996 (4) SA 671 (CC) at 688 para 26.

⁷⁷ Dean *Copyright* 1-2A, citing *In re certification of the Constitution of the RSA*, 1996 (4) SA 744 at 799. Dean criticises this decision strongly.

⁷⁸ See for example Malla Pollack 'The multiple unconstitutionality of business method patents: common sense, congressional choice, and constitutional history' (2002) 61 *Rutgers Computer & Tech LJ* 28.

(ii) Right to work

Section 22 of the South African constitution does however provide for the right to choose a trade, occupation or profession⁷⁹ ('right to work'). The Constitutional Court has held that meaning of this right is not found in the semantics of defining 'trade, occupation or profession' but in identifying the purpose of such activities, namely, that every citizen has the right to choose and practice an economic 'activity to pursue a livelihood'.⁸⁰ The courts have emphasised that this right is a 'sacrosanct'⁸¹ aspect of South Africa's constitutional democracy which places a premium on human dignity.⁸² This right has both horizontal and vertical application and binds the state and natural and artificial persons.⁸³ This means that in creating policies and enacting legislation

⁷⁹ For an overview of this right see Dennis Davis 'Economic activity' in S Woolman, T Roux and M Bishop *Constitutional law of South Africa – 2 ed* loose-leaf (1996 revision service 1998) 29-15 -29-19, Wessel le Roux 'Sex work, the right to occupational freedom and the constitutional politics of recognition' (2003) *SALJ* 452 at 458 - 462.

⁸⁰ IM Rautenbach 'The right to choose and practise a trade, occupation or profession the momentous and meaningless second sentence of section 22 of the Constitution' (2005).4 *TSAR* 851 at 854 (hereafter Rautenbach), *Affordable Medicines Trust v Minister of Health of RSA* 2005 6 BCLR 529 (CC) at para 59.

⁸¹ *JR 1013 Investments CC & others v Minister of Safety and Security & others* 1997 (7) BCLR 925 at 929 where the court said 'The right to choose a trade, occupation or profession is entirely different in nature from a right either to engage in economic activity or to pursue a livelihood. It is wider in content. *It is sacrosanct*' (my emphasis).

⁸² For example see *Reddy v Siemens Telecommunications (Pty) Ltd* 2007 (2) SA 486 (SCA) at 496 par 15 where the court said 'all persons should in the interests of society be productive and be permitted to engage in trade and commerce or the professions... Section 22 of the Constitution guarantees '[e]very citizen . . . the right to choose their trade, occupation or profession freely' reflecting the closeness of the relationship between the freedom to choose a vocation and the nature of a society based on human dignity as contemplated by the Constitution. Also see Rautenbach 855 citing *Affordable Medicines* at para 58.

⁸³ See s 7(2) of the Constitution and Rautenbach 856.

the state is enjoined to respect this right. Therefore South Africa's IP laws must not contravene this right.

The right to work can only be limited in accordance with s 36⁸⁴ of the Constitution.⁸⁵ In terms of this section fundamental rights can only be limited where such limitation is 'reasonable and justifiable in an open and democratic society based on human dignity, equality and freedom, and taking into account all relevant factors'.⁸⁶

The right to work has been judicially considered in a number of cases relating to restraint of trade agreements and the regulation or prohibition of trade where the courts have shown their commitment to ensuring its enforcement.⁸⁷ However, it is yet to be considered in the context I am contemplating here which is explained by the following example:

⁸⁴ s 36 of the constitution regulates the limitations of fundamental rights. It provides:
(1) The rights in the Bill of Rights may be limited only in terms of law of general application to the extent that the limitation is reasonable and justifiable in an open and democratic society based on human dignity, equality and freedom, taking into account all relevant factors, including-

- a) the nature of the right,
- b) the importance of the purpose of the limitation,
- c) the nature and extent of the limitation,
- d) the relation between the limitation and its purpose, and
- e) less restrictive means to achieve the purpose.

⁸⁵ Rautenbach 857-58, C-J Pretorius 'Covenants in restraint of trade: a synthesis of traditional, common law and constitutional approaches (2009) *Obiter* 154 at 160 (hereafter Pretorius).

⁸⁶ Pretorius 160.

⁸⁷ For example *Reddy v Siemens Telecommunications (Pty) Ltd* and *JR 1013 Investments CC & others v Minister of Safety and Security & others* supra.

If a person (A) chooses to be self-employed and to run an accommodation SME which employs e-commerce business methods, it is conceivable that A could argue that the IP protection, by for example patenting, of one of these methods by another person (B) prevents him (A) from freely practicing his chosen trade or occupation and that this is not justifiable in a democratic society. A's argument could succeed if:

1. A's business, or an aspect of it, can only be practiced by using that particular business method,
2. a licensing agreement cannot be concluded between A and B⁸⁸ and
3. the IP protection excludes A or other creators from developing functionally equivalent methods.

A's argument is buttressed by the fact that the South African constitution does not have a right to IP and B would therefore be unable to mount an argument in which he pits his own human rights against A's. A's argument could thus be successful.

However, B could contest A's claim that there is only one way in which to practice that element of A's business. B could therefore argue that as there are numerous permutations of the method in issue, A is not prevented from exercising his right to a trade or occupation of his

⁸⁸ The need to obtain licenses is a major barrier. See William Krause 'Sweeping the e-commerce patent minefield: the need for a workable business method exception' (2000) 24 *Seattle University Law Review* 79 at 80, Bender (1985) 412: 'licensing is by far the most important vehicle for acquiring rights in software created by another'.

choice because he could use another equivalent method. However, A could counter B's argument by contending that the need to find alternative methods, the threat of infringement actions and the need to negotiate licensing with patent holders poses significant barriers (patent thickets) which he cannot overcome. Therefore A is effectively prevented from practicing his chosen trade or occupation. This argument is likely to succeed because research has shown that these barriers are quite significant.⁸⁹

However, this constitutional protection of the right to work does not entitle users to free or unrestricted use of IP protected e-commerce business methods. IPR- holders have legally enforceable rights to charge market-related royalties for the licensed use of their protected methods and to pursue infringers. On the other hand, the exercise of these licensing rights ought to take cognisance of the fact South Africa is an emerging economy that seeks to promote the growth of SMEs. The significance of South Africa's economic status is discussed further in the following section (1.5.(c)). This thesis therefore does not make a case for free user access to business methods that flouts the legitimate

⁸⁹ Bessen and Meurer *Patent Failure* 8-9: 'For one thing, [in the US] a prospective technology investor needs to check a very large number of patents. According to David M. Martin, CEO of a patent risk management firm, "if you're selling online, at the most recent count there are 4,319 patents you could be violating. If you also planned to advertise, receive payments for, or plan shipments of your goods, you would need to be concerned with approximately 11,000.'"

rights of IPR holders. Rather, it seeks to make a case for an equitable balancing of creators and users' rights.

(c) Socio-economic context

*'Laws regulating intellectual property must serve as a means of achieving creative, social and economic ends and not as ends in themselves.'*⁹⁰

Public interest theories have been faulted for accepting that the same levels of IP protection as available in developed countries should be applicable to developing countries and for failing to question whether IP encourages innovation.⁹¹ This thesis avoids falling into this trap by focusing on the socio-economic status of South Africa and arguing that maximalist IP protection would not serve the country's economic goals.

⁹⁰ Principle 1 *Adelphi Charter*.

⁹¹ Okediji 'Narratives' 361 - 362.

Supporting this argument requires the establishment of the link between economic development,⁹² e-commerce and IP law. The first linkage between economic development and e-commerce has been convincingly made. It has been proven that there is a positive correlation between e-commerce and economic growth in both the developed⁹³ and developing world.⁹⁴ The second linkage between e-commerce, economic development and IP law is somewhat more controversial. It is generally accepted that law is important to

⁹² The classic definition is that economic development is ‘the process by which per capita income and economic welfare of a country improve over time’ per TR Jain et al *Development economics* (2008) 2.

The current and more progressive conceptualisation of economic development is that it is not only about ‘formal economic opportunities’ but is about human ‘freedoms and capabilities to have basic economic needs fulfilled’ per Amartya Sen ‘What is the role of legal and judicial reform in the development process?’ 12 Paper presented at Role of Legal and judicial reform in development, World Bank Legal Conference, Washington DC, 5 June 2000 (hereafter Sen ‘legal and judicial reform’). See also Amartya Sen ‘A decade of human development’ (2000) *Journal of Human Development* 17 at 18, Sudair Anand and Amartya Sen ‘Human development and economic sustainability’ (2000) *World Development* 2029 at 2032 and Amartya Sen ‘A decade of human development’ (2000) *Journal of Human Development* 17 at 18. For a discussion of how the understanding of economic development has changed over time see Irma Adelman *Theories of economic growth and development* (1961) 1, HW Arndt *Economic development: the history of an idea* (1989) 1 – 5 and Amartya Sen ‘Development and thinking at the beginning of the 21st century’ (1997) LSE STICERD Research Paper No. DEDPS 02 1-2, 26.

⁹³ Morrison & Sigel (1997) *ibid*, KJ Stiroh (2001) ‘What drives productivity growth?’ *Federal Reserve Bank of New York Policy Review* March: 37-59, DW Jorgenson & KJ Stiroh (2000) Raising the speed limit: US economic growth in the information age, *Brookings Papers on Economics Activity* 1: 125-211, J Dedrick *et al* (2003) *Information Technology and Economic Performance: A Critical Review and Empirical Evidence*, Working Paper Centre for Research on Information Technology and Organizations, University of California at Irvine, Dirk Pilat (2003) *ICT and Economic Growth: Evidence from OECD Countries, Industries and Firms*.

⁹⁴ UNCTAD ‘*E-commerce and Development Report 2003*’ 41, Stork and Essalaar *African e-Index* 49, Kofi A Annan Foreword to *UNCTAD E-commerce and Development Report 2002*: ‘E-commerce is one of the most visible examples of the way in which information and communication technologies can contribute to economic growth. It helps countries improve trade efficiency and facilitates the integration of developing countries into the global economy. It allows businesses and entrepreneurs to become more competitive. And it provides jobs, thereby creating wealth.’

economic development and that legal and economic development, among others, are 'constitutive parts of development as a whole'.⁹⁵ However, the impact of IP law on economic development is both topical and controversial.⁹⁶ Some scholars contend that since developed nations have both maximalist IP protection and strong economies, developing countries need to develop stronger IPR protection in order to enhance economic development.⁹⁷ This conclusion is contestable because these scholars did not ask when developed countries created these strong IPR protection systems. Was it before or after they had achieved significant economic growth? Other scholars argue that it was only after developed countries had achieved economic growth that they strengthened their IPR systems.⁹⁸

This second argument appears to be the stronger case because it has been shown that in their formative years today's developed countries showed scant regard for IPRs and routinely violated the IPRs of other

⁹⁵ Sen 'legal and judicial reform' 13.

⁹⁶ Ha-Joon Chang 'Intellectual property rights and economic development: historical lessons and emerging issues' (2001) 2 *Journal of Human Development* 287 (hereafter Chang 'historical lessons').

⁹⁷ Keith E Maskus 'Intellectual property rights and economic development' (2000) 32 *Case W Res J Int'L L* 471, RE Evenson 'Comment: Intellectual Property Rights and Economic Development' (2000) 33 *Case W Res J Int'L L* 187, Maskus, Keith E 'Foreign Direct Investment and Technology Transfer' in Fink, Carsten and Maskus, Keith E (ed.s) *Intellectual property and development: lessons from recent economic research* (2005) Washington DC, World Bank 41, Kamril Idris *Intellectual property- a power tool for economic growth* (2003).

⁹⁸ Dutfield *IPRs and the life science industries* 29, Ostergard *The development dilemma* 19. See also D Vaver *Intellectual property rights: critical concepts in law* (2006) 449 (hereafter Vaver *Critical concepts*).

countries' citizens.⁹⁹ For example the US Copyright Act of 1790 did not apply to the works of non-US citizens¹⁰⁰ and protection was only extended to some non-US citizens by the International Copyright Act of 1891.¹⁰¹

The same pattern of relying on minimalist IP regulatory systems during periods of steep economic growth is evident today. The economies of Brazil, Russia, India and China (together with South Africa collectively referred to as the BRICS)¹⁰² which are predicted to become the largest world economies by 2050¹⁰³ are currently on a steep growth curve. Analysis of their IP protection regimes shows that the protection they provide is considerably weaker than that provided by developed nations such as the United States and that they have

⁹⁹ Chang 'historical lessons' 303, Teljeur 25.

¹⁰⁰ B. Zorina Khan 'IPR Commission Study Paper 1a: Intellectual property and economic development: lessons from American and European history' 39. Available at <http://www.iprcommission.org/papers/pdfs/study_papers/sp1a_khan_study.pdf> (last accessed 9 April 2011) (hereafter Khan).

¹⁰¹ Khan 44.

¹⁰² Jack A Smith 'BRIC becomes BRICS: changes on the geopolitical chessboard' (2011) *Foreign Policy Journal*. Available at <<http://www.foreignpolicyjournal.com/2011/01/21/bric-becomes-brics-changes-on-the-geopolitical-chessboard/>> (last accessed 12 March 2011).

¹⁰³ Dominic Wilson and Roopa Purushothaman 'Dreaming with BRICs: the path to 2050' Goldman Sachs, Global Economics Paper No. 99, 2003 at 3 – 4 Available at <<http://www2.goldmansachs.com/ideas/brics/brics-dream.html>> (last accessed 12 March 2011).

consistently, but not always successfully, resisted pressure to strengthen their IP protection regimes.¹⁰⁴

In particular, it has been shown that China¹⁰⁵ and Brazil have minimalist IP protection but are thriving economically. For example, Brazil delayed the provision of patents for pharmaceutical patents until December 2004 but has become 'world's leading supplier of generic medicines'.¹⁰⁶ It is therefore reasonable to conclude that a strong or maximalist IPR protection system is only of marginal importance to a developing country's economic development.

There appear to be two reasons for this. First, the domestic benefits in the form of increased knowledge generation are likely to be very small as there are very low levels of research and development in developing countries and most of the knowledge generated there is sub -

¹⁰⁴ Robert C Bird 'Defending intellectual property rights in the BRIC economies' (2006) 43 *American Business Law Journal* 317 at 323 - 329, Robert C Bird 'The impact of coercion on protecting US intellectual property rights in the BRIC economies' in Subhash Chandra Jain (ed) *Emerging Economies and the Transformation of International Business: Brazil, Russia, India and China (BRICs)* (2006) 431 at 431 -432, Robert C Bird and Daniel R Cahoy 'The emerging BRIC economies: lessons from intellectual property negotiation and enforcement' (2007) 5 *Northwestern Journal of Technology and Intellectual Property* 400 at 403.

¹⁰⁵ For example Peter K Yu 'Intellectual Property, Foreign Direct Investment and the China Exception' in Subash C. Jain and Robert C Bird (eds) *The Global Challenge of Intellectual Property Rights* (2008), Peter K Yu 'Intellectual property, economic development and the China puzzle' in Daniel Geravis (ed) *Intellectual Property, Trade and Development Strategies to Optimise Economic Development in a TRIPS Plus Era* (2007) 174 - 175, 180.

¹⁰⁶ Di McIntyre and Gavin Mooney 'Where now with equity?' in Di McIntyre and Gavin Mooney (eds) *The Economics of Health Equity* (2007) 249 at 259.

patentable.¹⁰⁷ This is exacerbated by the fact that the infrastructure to support innovation is often lacking. Secondly, the international benefits that are said to flow from strong IP, namely greater technology transfer, foreign direct investment (FDI) and innovative efforts are also minimal.¹⁰⁸

There is only one in-depth study of the economic impact of IP in South Africa.¹⁰⁹ This study notes that there has been no research exploring the impact of South Africa's IP laws on FDI and technology transfer to South Africa.¹¹⁰ This study also notes that FDI inflows into South Africa have been minimal¹¹¹ although South Africa already has a relatively strong IP system.¹¹² This is evidenced by the fact that South Africa has consistently ranked highly in various indices evaluating the

¹⁰⁷ Chang 'hisorical lessons' 303.

¹⁰⁸ Chang 'hisorical lessons' 303.

¹⁰⁹ WIPO *The Economics of Intellectual Property in South Africa* (2009).

¹¹⁰ David Kaplan 'Intellectual Property Rights and innovation in South Africa: A framework' in WIPO *The Economics of Intellectual Property in South Africa* (2009) 1 (hereafter Kaplan) at 1 notes that prior to this WIPO study 'there [we]re virtually no studies or assessments that characterise and assess the overall IP regime. An even wider gap is the absence of any study of the broader impact of the IP regime on innovation and economic performance'.

¹¹¹ Kaplan 5. See note 116 below which provides the most recent FDI inflow data compiled by UNCTAD.

¹¹² Kaplan 2.

strength of national IP systems over the past decade.¹¹³ By all indications, this trend continues unabated.¹¹⁴

It is important to highlight that South Africa's IP system is much stronger than her fellow BRICS¹¹⁵ however they have received substantially higher FDI inflows than South Africa.¹¹⁶ The limited FDI inflows into South Africa prove that strong IP does not necessarily translate into stronger flows of FDI. On the other hand, the higher FDI inflows into the other BRICS (with weaker IP systems than South Africa's) demonstrate that weaker IP systems do not have a marked negative impact on FDI inflows. Therefore South Africa would do well to learn from her fellow BRICS and adopt a conservative IP regime

¹¹³ Ibid, noting that in 1998 South Africa scored the highest out of a ranking of 44 developing and industrialising countries carried out by Lesser, in 2005 South Africa scored higher than other similarly placed developing countries and even some developed countries on the Ginarte Park Index and in 2008 South Africa ranked 22 out of 115 countries in the Property Alliance's International Property Rights Index (IPRI). See further, W Lesser 'The Effects of TRIPS Mandated Intellectual Property Rights on Economic Activities in Developing Countries' (2001). Available at <http://www.wipo.int/export/sites/www/about-ip/en/studies/pdf/ssa_lesser_trips.pdf> and Property Rights Alliance, 'International Property Rights Index, 2008 Report' Available at <<http://internationalpropertyrightsindex.org/index.php?content=home>> (all sites last accessed 12 April 2011).

¹¹⁴ The Property Alliance's 2011 IPRI ranks South Africa's IP system as number 21 out of 129 countries with a score of 7.3 out of 10. Available at <http://internationalpropertyrightsindex.org/ATR_2011%20INDEX_Web.pdf> (last accessed 12 April 2011) at p.35.

¹¹⁵ In contrast to South Africa's placing at 21, the 2011 IPRI ranks Brazil and India at 51 with a score of 5.5 each. China ranks at 59 with a score of 5.2 and Russia ranks at 67 with a score of 5.

¹¹⁶ UNCTAD *Global Investment Trends Monitor* No 5 (January 2011) 3 notes that in 2010 South Africa received \$1.3 billion FDI inflows, whilst Brazil received \$30.2 billion, China received 101.1 billion (exclusive of the financial sector), India received \$23.7 billion and Russia received \$39.7 billion. Available at <http://www.unctad.org/en/docs/webdiaeia20111_en.pdf> (last accessed 13 April 2011).

which favours minimalism, within the bounds of her international obligations, until national socio-economic goals have been achieved.

With particular reference to e-commerce business methods, it can be argued that strong IP enforcement inhibits development, as the cost of buying or commissioning new methods, or developing one's own, is prohibitive in a developing country.¹¹⁷ South Africa therefore needs to be very circumspect and avoid strengthening IPRs at the expense of securing high levels of sustainable economic growth and human development. The first goal is to achieve desirable levels of economic growth and then to increase IP protection, if appropriate, thereafter. This is the crux of principle 8 of the Adelphi Charter which reminds governments that '*intellectual property laws must take account of developing countries' social and economic circumstances*'. The role of IP laws should, as stated by principle 1 of the Adelphi Charter be a means to achieving the end of economic growth.

(d) Deploying the Equitable IP model

This section outlines how the equitable IP model developed above will be used as an evaluative tool in subsequent chapters. As already stated, South Africa's status as a developing nation, the supremacy of the right to work over the right to IP and the national priority of

¹¹⁷ See the discussion of the potential harm to accommodation SMEs at section 1.4.1 above.

promoting SMEs in the tourism industry all point towards the primacy of user's interests.

Accommodation SMEs, being primarily users, need affordable and accessible e-commerce business methods to enable them to compete meaningfully on the market and to exercise their right to work. The success of these SMEs is dependent on the availability of these methods. Finally, users also require a clear IP regulatory regime within which they are certain of their legal rights.

However, this is not to say that creators are to be denied due recognition plus reasonable reward and remuneration for their efforts as this would ultimately be to the detriment of users. Creators' needs therefore need to be taken into account. One of creators' foremost needs is for IP protection that that is compatible with the nature of the good being protected (in this case, computer programs) and the manner in which the creative process unfolds (in this case, standard programming practices). The ease and affordability of acquisition of IP protection is also of paramount importance to creators. The cost of enforcement, which is generally high, is similarly important.

Creators also require legal clarity and certainty so as to be able to protect their IPRs and a free market within which to be efficiently productive. Finally, creators benefit from a vibrant commons from which to draw the building blocks for their creations. A conducive

environment for creators benefits users as it results in the availability of a large variety of high quality, affordable e-commerce business methods. The needs of creators therefore ought to be met, to a reasonable extent. For example, as argued above, prices and licensing fees in a developing economy ought to be sensitive to prevailing socio-economic conditions.

An equitable regulatory scheme will therefore meet these users' and creators' needs. To evaluate whether current patent, copyright and trade secret protection of e-commerce business methods is indeed equitable, the following questions will be asked of this protection:

1. Is there clarity and certainty with regard to the nature and scope of protection provided to e-commerce business methods by this IPR?
2. Is this form of protection compatible with creator's needs and practices?
 - a. Does it contribute to, or detract from, the commons from which ideas and functionalities are drawn?
 - b. Is it an appropriate reward?
 - c. Is it compatible with the nature of computer programs and the standard programming process?
 - d. Is it easy and affordable to acquire?
3. Does it benefit the user by making e-commerce business methods both affordable and accessible?
 - a. Does it encourage innovation and competition by meeting creators' needs appropriately?

Question 1 will be dealt with at sections 3.2, 4.3 and 5.1 which will give an overview of national approaches to the IP protection of e-commerce business methods. Questions 2 and 3 will be discussed at sections 3.3, 4.4 and 5.3 within the context of the debates that have arisen around the patent, copyright and trade secret protection of

computer programs. If the answers to these questions are in the affirmative, then that form of IP protection would have achieved an equitable balance between users' and creators' needs. Where the current position appears to be inequitable the answers to these questions may also support suggestions for how to create an equitable environment.

1.6 The research questions and thesis layout

Using the equitable IP model developed above this thesis attempts to answer the primary question of how e-commerce business methods ought to be protected by IP to ensure that accommodation SMEs are not denied access to these methods and to ensure that the creation of new methods is not stifled by inequitable protection.

Answering this question of necessity raises the following secondary questions:

1. What are the e-commerce activities of accommodation SMEs in the tourism sector?
 - a) Which business strategies and models do they employ?
 - b) Do these SMEs have their own websites or do they rely on tourism portals?
 - c) Where they rely on portals, what is their relationship to the portals?
 - d) Where they have their own websites, are these developed in-house by the SMEs, commissioned from others, self-tailored from off the peg packages, or are they simply off the peg packages?

2. Which types of e-commerce methods are these SMEs using?
3. Do they create these methods or do they use methods created by others?
4. Who has IP rights in these methods?
5. What is the current IP regulatory regime for e-commerce business methods?
6. Considering the position of these SMEs, is the current IP regulation of e-commerce business methods equitable?
7. If it is inequitable, how can or should it change?

Chapter Two answers questions 1 – 4 and so provides the state of the art of in relation to e-commerce and accommodation SMEs. Chapters Three, Four and Five answer questions 5-7 in relation to patents, copyright, trademarks and trade secrets. These chapters follow the same format; they begin by further defining the form of IP protection under discussion, then conceptualise how that protection applies to e-commerce business methods. This is followed by an examination of the public interest issues as established in section 1.5. Such examination is presented as a debate with a consideration of the position of both creators and users. Where appropriate the position of accommodation SMEs is considered separately. Each of these chapters concludes with some remarks on the equity of the form of IP protection under consideration. Chapter Six concludes the thesis with a summative evaluation of the equity of existing IP protection for e-commerce business methods. It also canvasses balancing tools which may be used

to achieve a more equitable balance between creators and users' interests.

1.7 Methodology

This thesis relies exclusively on written texts. The key primary materials consulted include international treaties and declarations, national legislation and policies as well as other official documents. The main secondary sources relied upon include books, journals, newspaper articles, research reports and theses in law, economics, business management and information systems. No new empirical research was undertaken for this work as the key evidence it relies upon has been generated by the sound empirical work of others. These studies, the methodology used in their selection and evaluation together with their findings are presented in Chapter Two (at section 2.3).

1.8 Choice of comparative jurisdictions

Whilst this thesis' primary focus is South Africa, it also considers the position in the United States, the European Union (EU) generally and the United Kingdom, in particular. Europe and the United States represent the two leading approaches to the patenting of computer programs and e-commerce business methods globally.¹¹⁸ Although there is an agreed patent law position in the EU as stated in the

¹¹⁸ John M Conley 'Strolling down State Street: the international law of business method patents' (2003) *Information and Technology Law* 57 at 80: 'There is at present a huge rhetorical gap between the United States, on the one hand, and Europe and Japan, on the other, concerning the patentability of business methods' (hereafter Conley).

European Patent Convention (EPC)¹¹⁹, contracting states interpret and apply these laws differently.¹²⁰ It is therefore also necessary to consider the position under the EPC contracting states' national legislation. Amongst EPC contracting states, the United Kingdom is one of the states with the most well developed national approaches to computer program and e-commerce business method patents.¹²¹ Therefore, it has been selected for the jurisdictional focus. Moreover, the South African Patents Act 57 of 1978 (SA Patents Act), the EPC and the United Kingdom's Patent Act Chapter 37 of 1977 (UK Patents Act) contain similarly worded provisions relating to software and e-commerce business method patents. This makes the examination of the EU and UK approaches particularly instructive for South Africa.

¹¹⁹ The Convention on the Grant of European Patents 1065 UNTS 199 (hereafter European Patent Convention (EPC)) (as amended).

¹²⁰ As evidenced by the failed attempt in July 2005 to harmonise the position through the Commission's *Proposal for a Directive on the Patentability of Computer Implemented Inventions* COM(2002) 92–2002/0047.

¹²¹ Conley 73.

Chapter Two: Accommodation SMEs and e-commerce

This descriptive two-part chapter outlines the state of the art in relation to e-commerce for the tourism industry in order to provide a factual basis for the normative claims made in subsequent chapters. Part A is a brief overview of the industry and the role of SMEs within the industry. Part B focuses on accommodation SMEs. Using existing literature, it provides a composite picture of current e-commerce activities of accommodation SMEs in South Africa and the typical e-commerce business methods used by these SMEs.

The literature reviewed and the evidence it provides, is presented thematically following the pattern in which the secondary research questions were presented in section 1.6 of Chapter One. For ease of reference the questions are reproduced below:

1. What are the e-commerce activities of SMEs in this sector?
 - a) Which business strategies and models do they employ?
 - b) Do these SMEs have their own websites or do they rely on tourism portals?
 - c) Where they rely on portals, what is their relationship to the portals?
 - d) Where they have their own websites, are these developed in-house by the SMEs, commissioned from others, self-tailored from off the peg packages, or are they simply off the peg packages?

- e) Which types of e-commerce methods are these SMEs using?
- f) Do they create these methods or do they use methods created by others?

The answers to these questions make it possible to build a composite picture of the anatomy of a typical e-commerce business method which is presented in section 2.4 as a conclusion to this chapter.

PART A: General overview

2.1 The tourism industry

The South African tourism industry is not identified as an independent industrial sector by the National Small Enterprise Act 102 of 1996 (NSEA) or in the national Standard Industrial Classification of all Economic Activities (SIC).¹ This is because tourism cuts across many industries. Tourism enterprises are identified by their provision of ‘tourism-characteristic goods and services’² which include³

1. Accommodation
2. Restaurants
3. Road, rail, water and air passenger transport services
4. Transport supporting services

¹ Statistics South Africa *Standard Industrial Classification of all Economic Activities* (SIC) 5 ed (1993).

² Tourism characteristic goods and services are ‘products which, in the absence of visitors, in most countries would probably cease to exist in meaningful quantity or for which the level of consumption would be significantly reduced and for which it seems possible to obtain statistical information’ per Statistics South Africa *Draft Tourism Satellite Account for South Africa, 2005* Discussion document: D0405.7 (May 2009) 22.

³ List compiled from lists in Phillips and Govender 37, Statistics South Africa *Status of the tourism satellite account in South Africa* Discussion document: D9106 (2005) 50 – 51, Statistics South Africa *Draft Tourism Satellite Account for South Africa, 2005* Discussion document: D0405.7 (May 2009) 21 - 22

5. Transport equipment rental
6. Travel agency, tour operator and tourist guide services
7. Library, archives, museums and other cultural services
8. Movie, radio, television and other entertainment services
9. Sporting and other recreational services

The structure of the tourism industry is similar to the retail industry and consists of suppliers, customers, distributors or intermediaries, goods and services.⁴ The products traded in the tourism industry are accommodation, food, transport, tours, sporting and cultural activities. The suppliers of these goods and services include hotels, motels, restaurants, travel agents and tour operators. The customers are domestic visitors and international tourists.

Supplier contact with customers depends on the business model in usage. With disintermediation the supplier contracts directly with the customer, for example through the supplier's own website.⁵ There are no intermediaries. In an intermediated value chain, the supplier uses a number of intermediaries to reach the consumer such as online portals or bundled offerings. Value chains and business models are discussed below

⁴ Laddawan Kaewkitipong and David Brown 'E-business use in small and medium sized tourism enterprises: a post-adoption perspective' at 2. Presented at the Americas Conference on Information Systems (AMCIS) 2007. Available at <<http://aisel.aisetnet.org/amcis2007/97>> (last accessed 4 October 2010).

⁵ Neil Botes and Graeme Newcomb *Reintermediating the Value Chain: Evaluating "Cybermediaries" as an E-commerce Business Strategy for the South African Tourism Industry* Unpublished MBA Research Report, Graduate School of Business, University of Cape Town, 2000 at 12-13 (hereafter Botes and Newcomb).

at section 2.3.1 (a). Before proceeding to this discussion, it is necessary to outline the characteristics and position of SMEs in the tourism industry.

2.2 SMEs in the tourism sector

SMEs in the tourism sector comprise (amongst others) accommodation providers (for example bed and breakfasts (B&Bs), guesthouses and lodges), urban tour facilitators, tour guides, restaurants and transport service providers.

SMEs are defined by s1 of the NSEA according to industry, number of employees, total turnover and total gross asset value. This section provides that an SME is

‘a separate and distinct business entity, together with its branches or subsidiaries, if any, including co-operative enterprises, managed by one owner or more predominantly carried on in any sector or sub-sector.’

The relevant industry sectors are: agriculture, mining and quarrying, manufacturing, electricity, gas and water, construction, retail and motor trade and repair services, catering, accommodation and other trade, transport, storage and communications, finance and business services and community, social and personal services.

The criteria relating to employees, total turnover and total asset value are provided for in the schedule to the NSEA. These criteria are fixed in accordance to the size of the enterprise and the industrial sector to which it belongs. The NSEA categorises small enterprises into micro-enterprises, very small enterprises, small enterprises and medium enterprises. This work is concerned only with small and medium enterprises in the tourism industry. This industrial sector is not treated as a separate sector and is part of the catering, accommodation and other trade sector. The relevant criteria relating to SMEs in this sector are reproduced below:

Size of class	The total full-time equivalent of paid employees	Total turnover	Total gross asset value (fixed property excluded)
Medium	200	R13m	R3m
Small	50	R6m	R1m

Table 2 Criteria for SMEs in the catering, accommodation and other trade sector

PART B: Accommodation SMEs

2.3 e-commerce activities

2.3.1 The studies

I conducted a non-exhaustive⁶ review⁷ of literature, particularly journal articles, books postgraduate theses and published conference proceedings

⁶ Whilst every effort was made to use thorough and rigorous search and selection methods, it is possible that that some relevant literature was overlooked.

written in English in the period January 2000 to the time of writing, October 2010. The review of literature was confined to this period as, due to the rapid change in ICTs and e-commerce activities, literature written before 2000 is likely to be redundant.⁸ The above listed types of literature were selected because their quality has been vetted by established academic processes namely peer-review or examination.⁹

Only MBA and PhD theses were relied upon as they are required to be more rigorous than undergraduate theses. MBA theses are of particular relevance to this thesis because of their focus on entrepreneurial issues. PhD theses are rigorous because they are required to make a novel contribution to a field.¹⁰ Further, because theses have no commercial bent (unlike books) and are not intended for a general readership, they are able to give in-depth analysis of niche subjects (such as accommodation SMEs) that generally do not have a wide appeal or huge potential (book or journal) readership. Finally, in selecting theses, the standing of the

⁷ The literature search and its subsequent evaluation was conducted according to the guidelines suggested by Justus J Randolph 'A Guide to writing the dissertation literature review' (2009) 14 Practical Assessment Research & Evaluation. Available at <<http://pareonline.net/getvn.asp?v=14&n=13>> (last assessed 28 October 2010) and Dawn Burton 'Using literature to support research' in Dawn Burton (ed) *Research Training for Social Scientists: A Handbook for Postgraduate Researchers* (2000), 137 (hereafter Burton 'Using literature').

⁸ Burton 'Using literature' 147 emphasises the need to make judgements about literature on sound considerations including date of publication, credentials of the author and publisher.

⁹ Ibid.

¹⁰ Dawn Burton 'Writing a thesis' in Dawn Burton (ed) *Research Training for Social Scientists: A Handbook for Postgraduate Researchers* (2000) 423 at 429.

institution with which the then-student author was affiliated was considered.

The methodology used to collect the data on which the literature is based was also evaluated to ensure that only literature with a sound basis is relied upon in this thesis.¹¹ The relevant literature obtained from this review is summarised below together with an indication of how it is relevant to this thesis.

E-commerce models and methods flow from strategies employed by a particular business. Therefore it is important to incorporate an examination of business strategies as they inform an enterprise's decisions on the selection of e-commerce business methods. Neil Botes and Graeme Newcomb's study evaluated the e-commerce business strategy of tourism enterprises in South Africa.¹² In addition to relying on literature, Botes and Newcomb used an online questionnaire to obtain the

¹¹ The methodology was evaluated against standards set in texts such as Michael D Myers *Qualitative Research in Business and Management* (2009) (hereafter Myers 2009), Michael D Myers 'Qualitative Research in Information Systems' 1997 (21)2 *MIS Quarterly* 241-242. *MISQ Discovery*, archival version, June 1997, Available at <http://www.misq.org/discovery/MISQD_isworld/> *MISQ Discovery*, updated version, last modified: February 17, 2011 available at <www.qual.auckland.ac.nz> (both last accessed 11 April 2011), Dawn Burton 'Design Issues in Survey Research' in Dawn Burton (ed) *Research Training for Social Scientists: A Handbook for Postgraduate Researchers* (2000) 292 and John W Creswell *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* 3 ed (2009).

¹² Botes and Newcomb.

views of tourism enterprises that use e-commerce and held a series of face-to-face semi-structured interviews with selected experts.¹³

The e-commerce activities of SMEs in the accommodation sector have been comprehensively described and analysed by Tonderai Maswera in his PhD thesis and numerous conference papers and journal publications.¹⁴ Maswera's work details the features of e-commerce websites, assesses their usability and makes some recommendations for improvements. Maswera's work is based on three online surveys of a total of 373 websites of tourism enterprises in South Africa, Kenya, Uganda and Zimbabwe and three questionnaires sent to these enterprises.¹⁵ Whilst the work covered four countries the results are clearly labelled by country of origin and economic activity and it is thus possible to extrapolate information relating to accommodation SMEs in South Africa.

¹³ Botes and Newcomb 20 – 22. 1043 requests to participate in the online survey were delivered to selected respondents and a 10.1% response rate was achieved. Respondents were selected through internet searches and from a proprietary database owned by the Southern African Tourism Services Association.

¹⁴ For example see T Maswera and R Dawson 'An evaluation of the use of the internet for customer relationship management by the travel and tourism industry in four African countries'. Presented at the Business Innovation in the Knowledge Economy Conference, IBM, Warwick, July 2003, T Maswera, R Dawson and J Edwards 'Analysis of usability and accessibility errors of e-commerce websites of tourist organisations in four African countries'. Proceedings of the 2005 Conference on Information and Communications Technologies in Tourism, Innsbruck, Austria, 531–542, Maswera et al 2008, T Maswera, J Edwards and R Dawson 'Recommendations for e-commerce systems in the tourism industry of sub-Saharan Africa' (2009) 26 *Telematics and Informatics* 12–19 (hereafter 'Maswera et al 2009').

¹⁵ Maswera PhD thesis 67 - 100, Maswera et al 2008 at 192, Maswera et al 2009 14.

Knowledge Mpofu's doctoral research has also focused on the e-commerce activities of accommodation SMEs in South Africa, Botswana and Zimbabwe. Mpofu details his findings with respect to accommodation SMEs in South Africa in an award winning paper written in 2009.¹⁶ Mpofu used a theoretically sampled multiple case study methodology and collected data through 17 semi-structured interviews, document analysis and participant observation.¹⁷ Among other things, Mpofu's work sheds light on the SMEs' use of their own websites and their use of portals.

Mpofu's findings are supported by two other studies. The first of these is Jump.co.za's 2009 E-commerce Survey Report which was based on a survey of 115 e-commerce shop owners in 2009 using an online close ended ¹⁸questionnaire.¹⁹ This report provides evidence of the usage of e-commerce packaged solutions, outsourced development and in-house

¹⁶ Knowledge Chinyanyu Mpofu 'ICT Adoption and Development of E-business among SMEs in South Africa' paper presented at the Institute for Small Business and Entrepreneurship (ISBE) 2009 conference. Available at <<http://www.isbe.org.uk/content/assets/BP09-KnowledgeMpofu.pdf>> (last accessed 29 October 2010) (hereafter 'Mpofu'). This paper won the 2009 Best academic research paper in ICT, IT and e-business in the small firm sector award.

¹⁷ Mpofu 10 - 11.

¹⁸ Allan H Church and Janine Waclawski (2001) *Designing and Using Organizational Surveys: A Seven-step Process* 67: close ended questions are questions with a 'limited number of options from which respondents must make one or more choices'. Examples include questions with a yes or no answer or multiple choice questions.

¹⁹ Jump.co.za '2009 E-commerce Survey' Available at <<http://www.jump.co.za/general/e-commerce-survey.htm>> (last accessed 2 October 2010). 900 invitations to participate in the survey were issued (12.7% response rate).

development of websites. The reasons for out-sourcing are probed by Johnson et al.²⁰ This quantitative study was conducted through the use of a questionnaire with close ended questions.²¹ This study was not industry specific and covered both SMEs and large businesses. However the results are clearly segregated by business size and it was possible to extract information about SMEs.

Other work focuses on specific aspects of e-commerce usage. A case in point is Elliot and Boshof's 2009 research on internet marketing in the tourism industry which used quantitative survey methodology.²² This research builds on earlier research findings published in 2007 which focused on factors which affected the success of internet marketing.²³

²⁰ KA Johnston, T Abader, S Brey and A Stander 'Understanding the outsourcing decision in South Africa with regard to ICT' (2009) 40(4) *South African Journal of Business Management* 37 (hereafter Johnston et al). 1809 questionnaires were distributed to respondents who were selected using judgment sampling. A response rate of 8.7% was achieved.

²¹ Johnson et al 41.

²² R Elliot and E Boshoff 'The marketing of tourism services using the internet: A resource-based view' (2009) 40(3) *South African Journal of Business Management* 35.

²³ R Elliot and C Boshoff 'The influence of the owner-manager of small tourism businesses on the success of internet marketing' (2007) 38(3) *South African Journal of Business Management* 15.

A second example is Verhoest *et al's* survey on ICT usage by tour operators in the Gauteng province of South Africa.²⁴ This research used Electronic Business Survey methodology that employs both qualitative and quantitative methods and encompassed 40 face-to-face interviews. This research provides evidence of the main e-commerce activities of tour operators. This work is relevant to the thesis because tour operators are a key member of the tourism value chain.²⁵ Whilst the work concentrated on SMEs in only one province of South Africa, it is relevant because it supports evidence generated by studies that had a nationwide focus.

An example of such nationwide research is the report published by Jacqui Kew and Mike Herrington in 2009 which documents the use of ICTs by SMEs in South Africa.²⁶ This work reports the results of a survey of 1807 enterprises in all of South Africa's nine provinces.²⁷ The enterprises were selected by random sampling and data was collected by personally administered structured interviews.

²⁴ Paul Verhoest *et al* 'E-tourism: a survey of e-business among South African tour operators' (2007) 8 *South African Journal of Information and Communication* 172 (hereafter 'Verhoest *et al*').

²⁵ Verhoest *et al* 176.

²⁶ Jacqui Kew and Mike Herrington 'ICT and Entrepreneurship' 2009 Small Enterprise Development Agency (SEDA). Available at <<http://www.gsb.uct.ac.za/files/SEDAICTReport2009.pdf>> (last accessed 28 September 2010).

²⁷ 1914 requests for interviews were made (94.4% acceptance rate).

The SME Surveys conducted annually by Wordwideworx provide evidence similar to that offered by Kew and Herrington. In particular, the 2007 Report provides evidence of Information Technology (IT) support and software and website development trends.²⁸ This report is based on 5124 interviews of decision makers in SMEs in all nine provinces. 241 of these SMEs were in the accommodation sector. This sample was randomly selected from a proprietary database and the respondents were interviewed by telephone.²⁹ Although Kew and Herrington's research and the SME Surveys reports do not give industry specific findings, they provide a very useful composite overview of the use of ICTs and e-commerce by SMEs in South Africa.

Finally, research by Research ICT Africa on ICT usage and access in 2006 also confirms these findings.³⁰ This research covered 14 African countries but the research and research findings are presented by country enabling the easy location of South African information. 280 South African SMEs, selected by judgment sampling, were surveyed.

²⁸ A Goldstuck *SME Survey 2007* SME Insight, Johannesburg, August 2007 (hereafter SME Survey 2007).

²⁹ SME Survey 2007 3.

³⁰ Stork and Esselaar *African e-Index*.

The body of work presented above provides the basis for the arguments advanced in this thesis. It is based on quantitative, qualitative and mixed-method research methods. Each of these adds value. An understanding of entrepreneurial behaviour is best constructed by qualitative research that enables the exploration of business contexts and the logic upon which decisions are made.³¹ Quantitative research such as Elliot and Boshoff's article generates evidence of patterns and trends that adds to the understanding of the tourism industry. This body of work is based on credible data collection techniques including surveys, individual and focus group interviews, participation observation and document analysis. Some studies, for example those by Maswera and Mpofo, use triangulated data collection methods that considerably strengthens their findings.

2.3.2 The findings

The sections which follow present the findings from the above studies. They also incorporate supporting evidence from other literature that did not specifically focus on accommodation SMEs in South Africa.

(a) Business models

E-commerce business methods are located within models which, in turn, are located within strategies. Business strategies are long term planning devices which factor in resources, relationships and institutional

³¹ Myers 2009 5.

concerns.³² Business models are the conceptual blue-prints for a business which identify customers and value propositions³³ and translate strategies into methods.³⁴

The four components of a business model are strategic choices, value creation, value networking and value capture.³⁵ A business model has six functions.³⁶ These are the creation and statement of an enterprise's:

1. value proposition
2. target market

³² R Feurer and K Chaharbaghi 'Strategy development: past, present and future' (1995) 33 *Management Decision* 11 at 11 quoting G Johnson and K Scholes *Exploring Corporate Strategy – Text and Cases* (1993).

³³ J Margetta 'Why business models matter' (2002) 80 *Harvard Business Review* 86 at 87 (hereafter Margetta 'Business models'). For other definitions see GM Mansfield & LCH Fourie 'Strategy and business models- strange bedfellows? A case for convergence and its evolution into strategic architecture' (2004) 35 *South African Business Management* 35 at 39 - 40 (hereafter Mansfield and Fourie 'Business models'), SM Shafer, HJ Smith and JC Linder 'The power of business models' (2005) 48 *Business Horizons* 199 at 200 and Adamantia G Pateli and George M Giaglis 'A framework for understanding and analysing ebusiness models' (2003) 16th Bled eCommerce Conference eTransformation. Available at <[http://www.bledconference.org/proceedings.nsf/0/4c84233423603ad0c1256ea1002d1a29/\\$FILE/25Pateli.pdf](http://www.bledconference.org/proceedings.nsf/0/4c84233423603ad0c1256ea1002d1a29/$FILE/25Pateli.pdf)> (last accessed 3 March 2011) (hereafter Pateli and Giaglis 'ebusiness models')

³⁴ Pateli and Giaglis 'ebusiness models' 337, Ljupco Krstov and Ursa Sinkovec 'Relations between business strategy, business models and e-business applications' (2007) Information and Intelligent Systems (IIS) conference Available at <http://www.foi.hr/CMS_home/znan_strucni_rad/konferencije/IIS/2007/papers/T03_02.pdf> (last accessed 3 March 2011).

³⁵ Shafer, Smith and Linder 'Business models' at 202.

³⁶ Henry Chesbrough *Open Innovation: the New Imperative for Creating and Profiting from Technology* (2002) 64-65 (hereafter Chesbrough *Open Innovation*), H Chesbrough and RS Rosenbloom 'The role of the business model in capturing value from innovation: evidence from Xerox Corporation's technology spinoff companies' Available at <<http://www.hbs.edu/research/facpubs/workingpapers/papers2/0001/01-002.pdf>> (last accessed 3 March 2011).

3. value chain
4. revenue generation, cost structures and target margins
5. value networks and
6. competitive strategy

The value proposition is the product or service offered to consumers.³⁷ For an accommodation SME it is the provision of high quality and cost effective accommodation. The target market consists of local or foreign travellers. This market is segmented and there is a whole range of accommodation offered, from low cost (such as back-packers) and high end (such as exclusive game lodges and private nature reserves).

Regardless of market segment, an SME's value chain is comprised of activities that are required to create and provide accommodation services to travellers.³⁸ Before significant uptake of e-commerce, the tourism value chain in South Africa consisted of destination service providers such as accommodation SMEs, inbound tour operators (IBTO), outbound tour operators (OBTO) and travel agents.³⁹ With the advent of e-commerce in tourism, the value chain has been reconfigured through

³⁷ Chesbrough *Open Innovation* 65.

³⁸ Chesbrough *Open Innovation* 66, OECD *Tourism in OECD Countries 2008: Trends and Policies* (2008)³⁴ (hereafter *OECD Tourism 2008*).

³⁹ Clive Wynne et al 'The impact of the Internet on the distribution value chain: The case of the South African tourism industry' (2001)¹⁸ *International Marketing Review* 420.

disintermediation followed by re-intermediation.⁴⁰ First, the conventional intermediaries lost their pole position through the process of disintermediation which saw service providers communicating and transacting directly with their customers. Secondly, completely new intermediaries or revamped conventional intermediaries entered the value chain as the numbers and complexity of e-commerce transactions grew. There are a number of internet intermediaries ('cybermediaries') such as third party portals and e-malls.⁴¹ These intermediaries can be classified according to the products and services they offer. The table

⁴⁰ P Alford 'E-Business Models in the Travel Industry' (2000) 3 *Travel & Tourism Analyst* 67, Markus Gratzner, Hannes Werthner and Werner Winiwarter 'Electronic business in tourism' (2004) 2 *International Journal of Electronic Business* 450-459, Dimitrios Buhalis and Hilary Main 'Information technology in peripheral small and medium hospitality enterprises: strategic analysis and critical factors' (1998) 10(5) *International Journal of Contemporary Hospitality Management* 198 at 202, Dimitrios Buhalis and Maria Cristina Licata 'The new eTourism intermediaries' (2002) 23 *Tourism Management* 207- 220, Dimitrios Buhalis and Peter O'Connor 'Information Communication Technology Revolutionizing Tourism' (2005) 30(3) *Tourism Recreation Research* 7 at 11, Dimitrios Buhalis and Konstantina Kaldis 'Enabled internet distribution for small and medium sized hotels: the case of Athens' (2008) 33(1) *Tourism Recreation Research* 67 at 69, Rob Law 'Disintermediation of hotel reservations: The perception of different groups of online buyers in Hong Kong'(2009) 21(6) *International Journal of Contemporary Hospitality Management* 766 at 767.

⁴¹ Industry Canada 'E-Commerce Overview Series Tourism Accommodation Sector in Canada' (2004). Available at < www.ic.gc.ca/epic/site/dsib-tour.nsf/.../tourisme_e.../tourisme_e.pdf> (last accessed 14 October 2010).

below shows the types of cybermediaries that have been identified⁴² and gives South African examples of each type.

Type of cybermediary	Function/service	Examples
Information Providers	The provision of information	1. South Africa online: A directory of South African sites http://www.southafrica-online.org/accommodation/ 2. Rooms for Africa www.roomsforafrica.com
Flexible Comparison Shopping Services	The provision of information and tools that facilitate the comparison of options	3. Seekers http://www.seekers.co.za/home.go 4. South African Lodges http://www.south-african-lodges.com/lodge-comparison-table.php
Electronic Booking Services	The provision of information and electronic bookings	5. SA Venues http://www.sa-venues.com/ 6. SA BookOnline http://www.sabookonline.com/public/home.aspx
Electronic Travel Agents	The provision of traditional travel agency services online, including payment facilities.	7. African Sun Travel http://africansuntravel.com/ 8. Flight Site http://www.flightsite.co.za/
Portals and electronic marketplaces	The provision search, selection and settlement for tourism services. ⁴³	9. Portfolio collection http://www.portfoliocollection.com/ 10. Hambalula http://www.hambalula.co.za/

Table 3: eTourism cybermediaries

⁴² Jay B Barney, Valentia Della Corte and Mauro Sciarelli 'Digital economy and sustained competitive advantage in the tourism industry' in Arturo Capasso, Giovanni Battista Dagnino, Andrea Lanza *Strategic Capabilities and Knowledge Transfer within and between Organisations: New Perspectives from Acquisitions, Networks, Learning and Evolution* (2005) 35 at 52 (note 7), Levi 'Information Technology and New Business Models' at 6, Pirijo Järvelä *et al* 'Business models for electronic commerce in the travel services' (1999)34 *Information Technology & Tourism* 185–196.

⁴³ George M. Giaglis, Stefan Klein & Robert M. O'Keefe 'The role of intermediaries in electronic marketplaces: developing a contingency model' (2002) 12 *Info Systems J* 231 at 233.

Botes and Newcomb have established that in South Africa the most common cybermediaries are online travel or booking agencies, travel portals and online destination marketing organisations.⁴⁴

The value network comprises the members of the value chain and third parties outside this immediate chain who work together to facilitate the provision of services to consumers.⁴⁵ For example the Tourism value network includes airlines and road transport providers. A consumer is able to secure accommodation through multiple routes in the value network. For example he may choose to communicate and transact directly with the accommodation establishment, use traditional retailers such as tour operators or use a cybermediary. The value network and these multiple procurement routes are depicted in the figure below:

⁴⁴ At 51.

⁴⁵ Chesbrough *Open Innovation* 68, OECD *Tourism 2008* 34.

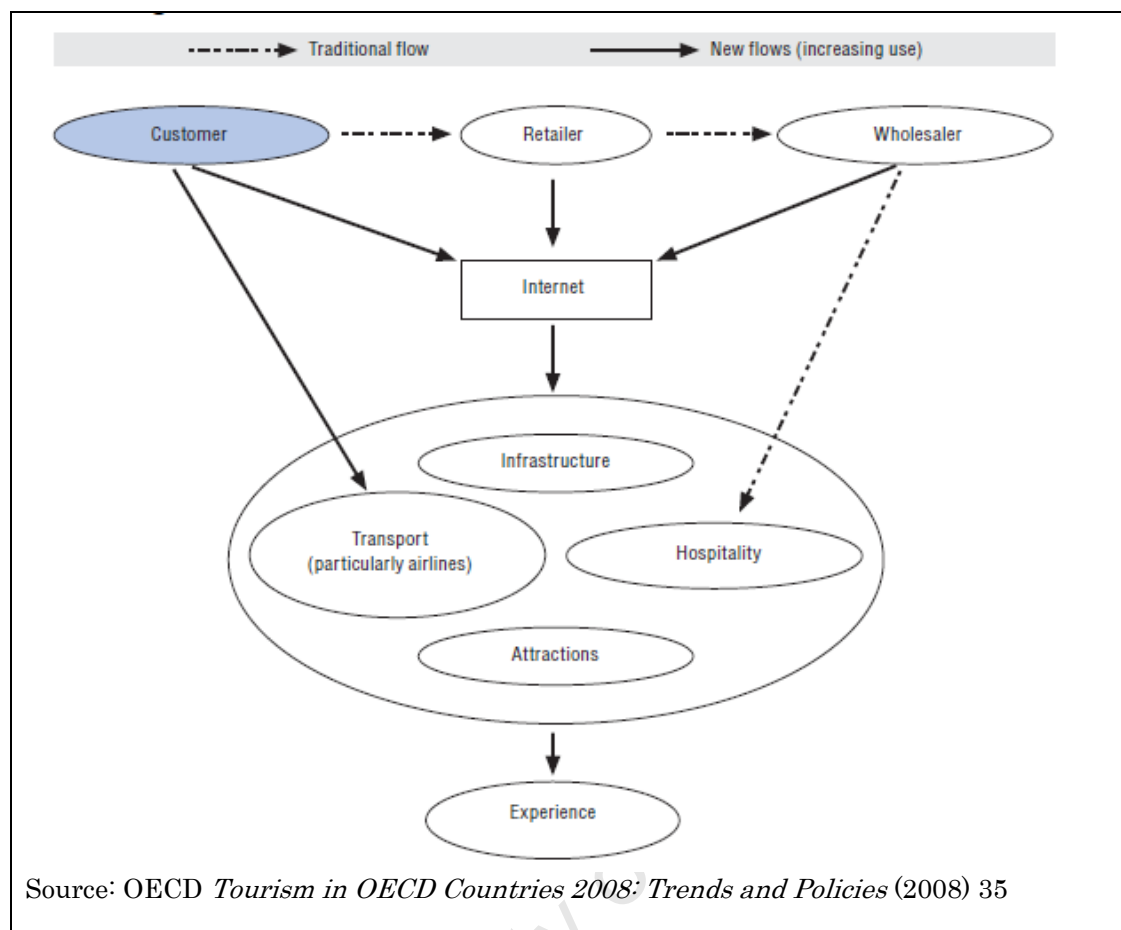


Figure 2: The Tourism Value Network

An enterprise's e-commerce business methods will be part of its value chain and network. The value chain will identify how it relates to other suppliers, its distribution channels and its customers. There are three value chain options that tourist enterprises have been found to use.⁴⁶ The first is a direct connection between the enterprise and its customers via

⁴⁶ Elena Levi 'Information technology and new business models in the tourism industry' presented at 8th Global Conference on Business & Economics, 18-19 October, 2008 Florence, Italy Available at < www.gcbe.us/8th_GCBE/data/Elena%20Livi.doc > (last accessed 7 October 2010) at 2 (hereafter Levi 'Information Technology and New Business Models').

the enterprise's website, the second is an intermediated connection and the third is a combination of the first two options.

(b) Use of websites (own versus portals)

All three of the establishments studied by Mpofu relied on tourism portals which they credited with sourcing the bulk of their clientele.⁴⁷

Two of these establishments also have their own websites on which they also provide booking facilities. It is difficult to generalise these findings as the study sample was very small. However, these findings provide useful insight in their indication that the majority of accommodation SMEs may prefer to use both their own website and tourism portals.

Further insight is provided by Verhoest et al who found that 34% of the establishments they studied relied on portals or 'third party websites'.⁴⁸

The relationship between SMEs and the third parties on whose websites, the SMEs offer their accommodation is contractual. The precise terms of the contract will depend on the third party involved. In general, there appear to be two models in usage namely:

1. commission based⁴⁹ and

⁴⁷ Mpofu 15.

⁴⁸ Verhoest et al 177.

⁴⁹ Tourism Destination Marketing South Africa 'Online portals: commission based' Available at < http://www.hospitalitysite.co.za/portals_commission.php > (last accessed 15 November 2010).

2. subscription based⁵⁰ online portals.

Some online portals advertise that their services are free⁵¹ but in reality their terms and conditions indicate that they either charge a listing fee⁵² or take a commission⁵³ on bookings made through their website.

When an accommodation SMEs uses a third party website it follows that the methods it uses on that website belong to or are licensed by the third party website. The provider could redirect the user to a 'frame' designed by the SME or use a standard format for all users. Processing of the use by consumers is generally undertaken by the third party provider. Where an SME has its own website the same situation would prevail, that is the SME could either own or license the methods from third parties. Further, where it owns the method it could be that the method was developed in-house, commissioned or purchased from a third party.

⁵⁰ Tourism Destination Marketing South Africa 'Online portals: subscription based' Available at <http://www.hospitalitysite.co.za/portals_subscription.php> (last accessed 15 November 2010).

⁵¹ Tourism Destination Marketing South Africa 'Online portals: commission based' Available at <http://www.hospitalitysite.co.za/portals_free.php> (last accessed 15 November 2010).

⁵² For example see Stayanight.co.za's terms and conditions. Available at <<http://www.stayanight.co.za/terms-and-conditions>> (last accessed 15 November 2010).

⁵³ For example, see clause 8 of Venues4Africa.com's terms and conditions. Available at <<http://www.venues4africa.com/general/Terms-of-Use/2>> (last accessed 15 November 2010).

Botes and Newcomb found that 47% of the establishments they studied relied on a professional web design house for website design and that thereafter 34% relied on these houses for web site maintenance.⁵⁴ They found that 16% relied on an internet service provider for both initial design and subsequent maintenance.⁵⁵ They found that 33% developed the website in-house and that 43% maintained the sites in-house.⁵⁶ This shows that the SMEs took on the maintenance of websites that had initially been developed by others. Finally, Botes & Newcomb found that 4% of the websites were developed by 'others' which included friends, colleagues and family of the SME's owner or manager.⁵⁷ The general trend seems to be that professional development by third parties is the most common mode of website development. It is noteworthy that 33% developed the websites in-house and an even larger proportion (43%) maintained the websites in-house. This shows that these SMEs are also producers of e-commerce business methods. Therefore it is important to discuss the perspectives of both users and creators of business methods in this thesis.

This out-sourcing trend was confirmed by Jump.co.za's 2009 survey which found that only 38% of e-commerce solutions used by the

⁵⁴ Botes & Newcomb 67.

⁵⁵ Ibid.

⁵⁶ Ibid.

⁵⁷ Ibid.

enterprises they surveyed were developed in-house.⁵⁸ Whilst the Jump.co.za survey was not confined to accommodation SMEs it provides evidence for the fact that third party professional development of websites and business methods is the general trend across industries and different enterprise sizes. Further corroboration is provided by Johnston *et al* who found that the out-sourcing trends of SMEs are similar to those of larger enterprises.⁵⁹ This is because the factors driving the decision are the same. They identified these factors to relate to expenses, 'personal connections, access to a mass of skilled technical professionals and project management skills'.⁶⁰

This reliance on out-sourcing means that the impact of IP protection on the third parties (creators) who develop methods will indirectly affect accommodation SMEs due to their reliance on the third parties. Therefore, whilst accommodation SMEs are primarily users of methods developed by others, arguments about the position of creators of methods are of great significance, hence their inclusion in this thesis.

⁵⁸ Jump.co.za 'Ecommerce Survey' 2.

⁵⁹ Johnston et al 37 and 40.

⁶⁰ Johnston et al 40.

(c) Business activities

All of the main studies into e-commerce and accommodation SMEs as listed in section 2.3.1 above found that the key online or e-commerce business activities of SMEs in the accommodation sector are:⁶¹

1. The provision of corporate information (in compliance with legislative requirements)
2. The provision of information about the accommodation on offer (product information)
3. Relevant non-product information such as weather forecasts, transport services, activities in the vicinity of the accommodation, and immigration information
4. Search, reservation and payment facilities for the accommodation on offer
5. Customer relationship management (CRM)

The popularity of these features is also confirmed by the non-industry specific studies conducted by Jump.co.za, Stork and Essalar and Kew & Herrington.⁶²

(d) Business methods

An SME will use those methods that enable it to carry out the activities listed above. An SME that provides online booking facilities will provide online service availability search tools presented on the business' own website or on a website owned by another person for example a portal

⁶¹ Maswera PhD thesis 100-106, Mpofu 13, Elliott & Boshoff 2009 36, Botes & Newcomb 66, Verhoest et al 176 – 177.

⁶² Stork & Essalaar *African e-Index* 120, Kew & Herrington at 58, Jump.co.za 'Ecommerce Survey' 1 - 2.

offering information on tourist resorts or activities. This search functionality might be augmented by a service booking and payment facility. These website tools usually work with telephone, email and short message services (SMSes). For example, once a customer logs an enquiry on a website, the SME could then telephone, email or SMS a quotation to the customer. Botes and Newcomb found that these are ‘the most predominant website facilities’ offered by accommodation SMEs.⁶³ This finding is corroborated by Verhoest et al’s later study that found that a significant percentage of tour operators had ‘advanced online ordering facilit[ies]’.⁶⁴ Similarly, Maswera reports that online enquiries and bookings are the most common features.⁶⁵ However, he found that only 31% of accommodation websites he surveyed or evaluated provided online payment facilities.

According to Botes & Newcomb the tools most frequently used for CRM are customer feedback forms and online discussion forums.⁶⁶ Maswera notes that the following are the most common CRM features:⁶⁷

1. Contact details
2. Email address
3. Electronic newsletters

⁶³ Botes & Newcomb 66.

⁶⁴ Verhoest et al 177.

⁶⁵ Maswera PhD thesis 165, Maswera et al 2008 165.

⁶⁶ Botes & Newcomb 66.

⁶⁷ Maswera et al 2008 195.

4. Promotions & special offers

2.4 Conclusion: The anatomy of an accommodation SME's e-commerce business methods⁶⁸

Based on the above details pertaining to the key attributes of e-commerce business methods used by accommodation SMEs it is possible to present the anatomy of these business methods. It is important to highlight the constituent parts of these methods in this manner as this makes it possible to identify those aspects to which IP protection applies or may be applied to.

As stated in Chapter One, e-commerce business methods are a type of application software. Therefore their basic anatomy is that of software and comprises of three key elements namely the computer program, data bases and documentation. Using this basic characteristic as a starting point and drawing detail from section 2.3 above, the main parts of e-commerce business methods used by accommodation SMEs are:

1. The computer program being the source and object code. The functionality of the method resides in the object code and the algorithm is expressed by the source code. As already, stated the

⁶⁸ This title is inspired by Lipton's subtitle 'The anatomy of a computer program' at 218.

key functionalities used or provided by accommodation SMEs are search, booking and payment facilities.

2. Preparatory documentation such as illustrations, design or program documentation in the form of flowcharts and ancillary documents such as program manuals. Technical information will be contained in the preparatory documents. The ancillary documents provide instructions on how to use the method but typically do not provide technical information about the method's 'inner workings'.⁶⁹
3. The input material such as the accommodation SME's electronic database⁷⁰ of room availability or customer information and preferences.
4. The output material such as the results of processed input data, for example a list of suitable accommodation.

Elements 3 and 4 will be presented via the method's UI on the accommodation SME's website.

The e-commerce features that seem to raise IP protection issues are those that relate to search, booking and payment functionalities. This is because these are the core functionalities of e-commerce business

⁶⁹ Bender (1970) 929.

⁷⁰ 'Electronic databases are simply organised collections of data or information in electronic or digital form from where such data or information may be accessed, reproduced or retracted' per Tana Pistorius 'The protection of electronic databases' (2000) 12 *SA Merc LJ* 184 at 184.

methods. For example, Mpofu reports that two of his three case studies credit websites with these functionalities as the source of more than 80% of their international clients.⁷¹ The types and level of IP protection of these aspects will therefore significantly impact on an SME's decision whether or not to adopt e-commerce. If an SME cannot secure access to these features on reasonable terms, it may very well choose not to adopt e-commerce. If it decides to adopt e-commerce nonetheless, it is likely that its business will flounder due to its inability to transact with the huge international potential market.

It is thus essential to carefully evaluate the possible forms of IP protection which are available for these core features and other important aspects such as preparatory and ancillary documentation, the UI or website on which the methods are used.

The table below shows the IP protection options which are available for each of these:

Aspect /functionality	IP protection
Search, booking and payment	Patent, copyright, trade secret
UI or Website (text, graphics, effects)	Copyright, design
UI or Website (branding)	Trademarks, domain name protection
Input data	Trade secret, copyright, database right
Output data	Copyright, database right
Documentation	Copyright, trade secret

Table 4: IP protection of e-commerce business methods

⁷¹ Mpofu 15.

Chapters Three, Four and Five will consider patent, copyright, trademark and trade secret protection. The thesis' focal point will be the protection of the computer program as it encapsulates the most important element of an e-commerce business method – its core functionality. A major aspect of the consideration of IP protection will involve an examination of whether or not these forms of protection are equitable using the equitable IP model developed in Chapter One as a yardstick.

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Chapter Three: Patents

‘To characterize "1-Click" as an "invention" is a parody... it makes my blood boil.’¹

Patent protection for computer programs generally, and those underlying e-commerce business methods in particular, is both controversial and emotive. Of particular concern to this thesis is the possibility that these patents are disadvantageous to SMEs as both creators and users of e-commerce business methods. Patent protection is much more problematic than other types of IP protection such as copyright because it precludes reverse engineering and independent development of the same computer programs or e-commerce business methods by others.²

This chapter focuses exclusively on the patent protection of computer programs for e-commerce business methods. Patent protection does not extend to the other constituent elements of an e-commerce business method listed in section 2.4 above, namely, preparatory or design documentation, and input or output material.

¹ Tim O’Reilly (February 2000) ‘Open source, patents and O’Reilly’ Available at <http://oreilly.com/pub/a/oreilly/ask_tim/2000/amazon_patent.html> (last accessed 13 March 2011).

² W Cornish, D Llewelyn and T Aplin *Intellectual Property: Patents, Copyright, Trademarks and Allied Rights* 7 ed (2010) 8, para 1 -05 (hereafter Cornish et al *Intellectual Property*): ‘...patents are the most basic, most valuable, and to competitors, potentially the most dangerous, of all intellectual property- the category that demands to be studied above all others.’

This chapter proceeds in five parts. Part 1 (section 3.1) presents a general overview of patent protection and outlines patentability requirements. Part 2 (section 3.2) canvasses restrictive and liberal national approaches to the patenting of computer programs and e-commerce business methods. In particular, it outlines the laws and practices of the EU, the United Kingdom, the United States and South Africa. It also considers second tier patents generally and Australia's Innovative Patent System, in particular. Part 3 (section 3.3) focuses on the debate on the patenting of computer programs. It discusses the public interest issues raised by the patenting of computer programs. This is followed by a consideration of the position of SMEs first as creators, then as users, of e-commerce business methods. Part 4 (section 3.4) focuses on the impact of patenting computer programs for e-commerce business methods on accommodation SMEs. Part 5 (section 3.5) concludes the chapter.

3.1 Patents

Patent law has numerous economic instrumentalist purposes which include rewarding creators, incentivising further innovation and the dissemination of new, useful information.³ In return for full disclosure of the relevant invention, a patent holder has exclusive rights in an invention which exclude others from exploiting the invention through manufacture and domestic or international distribution without the

³ Dutfield and Suthersanen *Global Intellectual Property Law* 110 - 111.

patent holder's consent⁴ for a standard term of twenty years.⁵ A patent holder has the right stop others from using his invention or to regulate such use, for example through licenses. Any unauthorised exploitation of a patented invention constitutes infringement⁶ and the patent holder may sue for a prohibitory interdict, damages or an account of profits and attorneys' fees.⁷

Patents are issued by a state patent office after a procedural or substantive examination for an initial renewable period of twenty years. The European Patent Office (EPO), the United Kingdom Intellectual Property Office (UKIPO) and the United States Patents and Trademarks Office (USPTO) conduct substantive examinations to ensure that the claimed invention meets patentability criteria (as outlined at section 3.1.1

⁴ For example, s 45 SA Patents Act provides:
'(1) The effect of a patent shall be to grant to the patentee in the Republic, subject to the provisions of this Act, for the duration of the patent, the right to exclude other persons from making, using, exercising, disposing or offering to dispose of, or importing the invention, so that he or she shall have and enjoy the whole profit and advantage accruing by reason of the invention.

(2) The disposal of a patented article by or on behalf of a patentee or his licensee shall, subject to other patent rights, give the purchaser the right to use, offer to dispose of and dispose of that article.'

⁵ US Patents Act, 35 USC s 271(a) and 154 (a) (2), SA Patents Act s 46, UK Patents Act, Ch 37 of 1977 s 25(1), Art 63(1) of 'The Munich Convention' Convention on the Grant of European Patents 1065 UNTS 199 ('European Patent Convention' (hereafter EPC)).

⁶ See for example s 60 UK Patents Act.

⁷ See for example, ss 283 – 285 US Patents Act, s 61 UK Patents Act.

below) whilst the South African Patent Office (SAPO)⁸ does not. The SAPO is a registration patent office that simply registers patents without substantive examination. Patented South African inventions are substantively examined by courts if an infringement or revocation action is instigated. Applications for patents may be made through state or regional offices or the Patent Co-operation Treaty (PCT)⁹ system. If an application is made through the PCT system, an international search is conducted to establish patentability.

None of the jurisdictions discussed in this chapter provide for the formal opposition of patent applications by the public during the application process. However, s 21 of the UK Patents Act provides for the filing of written observations on the patentability of an invention by third parties. Such observations are required to be supported by reasons. These observations are then considered in accordance with rules. On the other hand, all four jurisdictions provide for post grant challenges to patents on various grounds, the most important of which is failure to meet patentability criteria.¹⁰

⁸ The SAPO is part of the Companies and Intellectual Property Registration office (CIPRO) which will be converted into the Companies and Intellectual Property Commission when the Companies Act 71 of 2008 comes into force.

⁹ Art 3 Patent Co-operation Treaty (PCT) 1160 UNTS 231.

¹⁰ Article 100(b) of the EPC, s 72 of the UK Patents, s 61 of the SA Patents Act, ss 310 -318 US Patents Act.

3.1.1 Patentability Requirements

To qualify for patent protection, an invention¹¹ must meet specific criteria. It must be new, include an inventive step and have industrial application.¹² Further, the patent application must adequately disclose the invention.¹³ These requirements are summarised below.

(a) Novelty

To meet this requirement an invention must be new at the priority date which is the date on which the application was lodged. An invention will have novelty if ‘it does not form part of the state of the art’¹⁴ and is not anticipated by some prior art. Generally, prior art or ‘the state of the art’ refers to all information which is publicly available worldwide by written or oral description or by demonstration. It also extends to information contained in patent applications with earlier priority dates.¹⁵ The legislation of all four jurisdictions under study provides for non-

¹¹ WIPO *Intellectual Property Handbook: Policy, Law and Use* (2001) 17 defines an invention as a product or process created to solve a specific problem in any field of technology.

¹² s 101 of the US Patents Act, s 25(1) SA Patents Act, s1(1) UK Patents Act and Art 52(1) EPC.

¹³ See for example s 32 SA Patents Act.

¹⁴ s 2(1) UK Patents Act, art 54(1) EPC.

¹⁵ s 2(2) – (3) UK Patents Act and art 54 (2) –(3) EPC. For judicial consideration of these forms of disclosure see *Fomento v Mentmore* [1956] RPC 87, *University Patents, Inc. v SmithKline Beecham Biologicals SA* decisions of the, case G 03/98 case G 03/98 EPOR 33 (EPO Enlarged Board of Appeal G 0003/98, Bd. App. 2000), *Merrell Dow v Norton* [1996] RPC 76, HL, 35 USC s102, s25(6)- (8) SA Patents Act,

prejudicial disclosures such as unauthorised disclosures, authorised disclosures at exhibitions and reasonable technical trials.¹⁶

(b) Utility/industrial applicability

An invention must successfully claim utility¹⁷ or industrial applicability¹⁸ to secure a patent. The crux of the utility/industrial application requirement is that the claimed invention should be reducible to practical use.¹⁹ The US Patent Act does not define utility but US courts have held that for utility to exist the invention must not be 'frivolous or injurious to the well-being, good policy, or sound morals of society'.²⁰ The USPTO's Utility Examination Guidelines expand on this position.²¹ The South African Patents Act, the EPC and the UK Patents Act all provide that an invention is capable of industrial application if it can be produced or used in industry, trade or agriculture.²² However methods of surgical, therapeutic and diagnostic treatment of the human or animal body are expressly excluded from having industrial applicability.²³ Computer

¹⁶ See for example art 55 EPC, s 2(4) UK Patents Act, s26 SA Patents Act.

¹⁷ s 101 35 USC.

¹⁸ Art 52(1) EPC, s 1(1)(c) UK Patents Act, s25 SA Patents Act.

¹⁹ WIPO *IP Handbook* at 2.10.

²⁰ *Lowell v Lewis* (1817) 15 F. Cas. 1018.

²¹ USPTO *Utility Examination Guidelines* Federal Register / Vol. 66, No. 4 / Friday, January 5, 2001 / Notices 1092 at 1098 'An invention has a well-established utility (1) if a person of ordinary skill in the art would immediately appreciate why the invention is useful based on the characteristics of the invention (*e.g.* properties or applications of a product or process), and (2) the utility is specific, substantial, and credible.'

²² S 25(1) SA Patents Act, art 57 EPC, s 4(1) UK Patents Act.

²³ Art 52(4) EPC, s 4 (2) UK Patents Act, s 25(11) – (12) SA Patents Act.

programs and e-commerce business methods generally have industrial applicability.

(c) Non-obviousness/inventive step

This requirement demands that an invention must differ sufficiently from previous inventions so that it would not be obvious to someone with skill in that field.²⁴ The courts in all four jurisdictions have formulated a test that comprises of four steps or questions.²⁵ These steps or questions comprise of:

1. an evaluation the prior art,
2. the identification of the problem solved by the invention
3. the identification of the notional 'person skilled in the art' to which that invention relates
4. and an evaluation of whether faced with a similar problem a person with ordinary skill in the art would have created the same solution/invention

If the answer to the last question is that a person with ordinary skill in the art would have created the same invention as that for which a patent is being sought, then the invention is unpatentable.

²⁴ s 25(10) SA Patents Act, s3 UK Patents Act, art 56 EPC, s 103 35 USC.

²⁵ The leading US case on this is *Graham v John Deere Co.* 383 US 1 (1966), the UK test is found in cases such as *Windsurfing International v Tabur Marine* [1985] RPC 59, CA and *Pozzoli v BDMO* [2007] EWCA Civ 588 at para 23, the leading South African case is *Ensign-Bickford (SA) (Pty) Ltd and others v AECE Explosives and Chemicals Ltd* 1999 (1) SA 70 (SCA) at 80.

3.2 National approaches to patenting e-commerce business methods

Computer programs are patentable under the EPC, US Patents Act, UK Patents Act and the SA Patents Act. The UK's technical effects approach appears to be the strictest, and the United States' position appears to be the most lenient. However, the June 2010 US Supreme Court decision in *Bilski v Kappos*²⁶ seems to indicate that the approach in the US may be returning to its earlier more restrictive approach. South African courts are yet to deliberate on the meaning of the limited computer program and business method exclusion, but the debate about the desirability of patents for computer programs continues unabated.²⁷ These different approaches to patenting computer programs are discussed below under two broad categories, namely liberal and restrictive approaches.

3.2.1 The liberal approach

The United States is considered more liberal than the other three jurisdictions being considered in this chapter because it does not have a statutory computer program exclusion. Prior to 1998 there was, in practice, a business method exception, which was jettisoned by the Federal Circuit Court in *State Street Bank & Trust v Signature Financial*

²⁶ *Bilski et al v Kappos* 130 S.Ct. 3218.

²⁷ Sheppard 2000, Mooki, Sheppard 2001, de Villiers, Ryan, Abramson, C de Villiers and Tshaya.

Group.²⁸ Patents are therefore granted for computer programs for e-commerce business methods in the United States if they meet the patentability standards required for all other inventions.

The first hurdle to be passed by such inventions is the satisfaction of the US Patents Act's s101 subject matter eligibility criteria. Under this section the claimed invention must be a process,²⁹ machine, manufacture or composition of matter, or an improvement thereon. The US Supreme Court has handed down four judgments on computer program and e-commerce business methods. In its 1972 decision in *Gottschalk v Benson*³⁰ and 1978 decision in *Parker v Flook*³¹ the Supreme Court held that the computer program in issue was not patentable because as mathematics it was abstract. In 1981 in *Diamond v Diehr*³² the Supreme Court permitted the patenting of a computer program which it found to go beyond the abstract because it involved the transformation of an article. These first three decisions are commonly referred to as the

²⁸ *State Street Bank & Trust Co. v Signal Financial Group, Inc.* 149 F.3d 1368 (1998) *cert denied* 119 S. Ct. 851 (1999). The business method is this matter managed portfolios in a hub and spokes formation to reduce administrative costs and use tax benefits.

²⁹ Computer programs and e-commerce business methods are processes which are defined by s 100 (b) as 'process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.'

³⁰ *Gottschalk v Benson* (409 U.S. 63 (1972)). The computer program in issue was 'a method of programming a general-purpose digital computer to convert signals from binary-coded decimal form into pure binary form' (at 65).

³¹ *Parker v Flook* (437 U.S. 584 (1978)). The computer program in issue was a method for updating alarm limits during catalytic conversion processes (at 585).

³² *Diamond v Diehr* (450 U.S. 175 (1981)). The computer program ran a process for curing raw uncured synthetic rubber (at 177).

‘patent-eligibility trilogy’ or ‘*Benson, Flook and Diehr*’.³³ Following these rulings the Federal Circuit Court, an appellate court formed in 1982, developed two tests for subject matter eligibility. The first test was whether the process resulted in a ‘concrete tangible and useful result’. This test was applied in cases such as *Arrhythmia Research Technology Inc. v Corazonix Corp.*,³⁴ *In re Alappat*,³⁵ *State Street* and *AT&T v Excel Communications Inc.*³⁶ However, in its 2008 *In re Bilski* ruling the Federal Circuit Court rejected this test in favour of the ‘machine or transformation’ test as the sole criteria for patent subject matter eligibility.³⁷ This test is a two-pronged test that asks whether a process claim is ‘tied to a particular machine’ or ‘transforms an article’.

In June 2010, the Supreme Court, ruling on an appeal against the Federal Circuit Court’s ruling in *Bilski*, held that the machine or

³³ See for example Nellie A. Fisher ‘The patent eligibility of computer implemented processes in the wake of *In Re Alappat*: The Diehr standard resurrected’ (1995-1996) 32 *Houston Law Review* 517 at 524 and Jeremy Philips ‘A summer of anticlimax’ (2010) 5 (9) *Journal of Intellectual Property Law & Practice* 615.

³⁴ *Arrhythmia Research Technology Inc. v Corazonix Corp.* 958 F. 2d. 1053 (1992). The invention in question was ‘directed to the analysis of electrocardiographic signals in order to determine certain characteristics of the heart function’ (at 1054).

³⁵ *In re Alappat* 33 F. 3d. 1526 (1994). The contested invention related to a ‘means for creating a smoothwave form display in a digital oscilloscope’ (at 1537)

³⁶ *AT&T v Excel Communications Inc.* 172 F.3d 1352, 1353 (1999). The contested business method was a system for billing long distance telephone calls.

³⁷ *In re Bilski* 545 F.3d 943 (2008) at 959, Thomas J. Scott, Jr. and Stephen T. Schreiner ‘Planning for the brave new world: Are business method patents going to be second class citizens?’ (2007) *Intellectual Property & Technology Law Journal* 6 at 10. The contested business method in *In re Bilski* was ‘a method for hedging risk in the field of commodities trading’ (at 949).

transformation test was not the only test and new technologies would require new tests.³⁸ However, the Supreme Court did not venture to suggest any such new tests and has thus raised uncertainty with regard to computer program patents and e-commerce business methods.³⁹ In its decision on the e-commerce business method patent in issue, the Supreme Court relied on *Benson, Flook and Diehr* and held that the method of hedging financial risk was abstract and was thus unpatentable. This reliance on *Benson, Flook and Diehr* together with the rejection of the Federal Circuit's approach in *State Street* indicates that the US position on computer program and business method patents has come full circle and ultimately returned to its original more restrictive approach.⁴⁰ Pursuant to this decision the USPTO issued new guidelines that reflect a more restrictive approach.⁴¹ This restrictive approach is also confirmed by the July 2010 decision of the USPTO Board of Patent Appeal & Interferences decision in *Ex parte Proudler* which

³⁸ *Bilski et al v Kappos* 130 S.Ct. 3218.

³⁹ Stuart P Meyer 'Business methods dodge a bullet - method patents survive for now' (2010) 15 *Cyberspace Lawyer* 1. Also see Mark A Lemley, Michael Risch, Ted M Sichelman and R. Polk Wagner 'Life after Bilski' (13 December 2010) *Stanford Law Review* (forthcoming), Stanford Public Law Working Paper No. 1725009; San Diego Legal Studies Paper No. 11-046; U of Penn, Inst for Law & Econ Research Paper No. 11-02; U of Penn Law School, Public Law Research Paper No. 11-05. Available at SSRN <<http://ssrn.com/abstract=1725009>> (last accessed 15 April 2011).

⁴⁰ Kimberley N Van Voorhis 'The business method patent 360: have they come full circle (or did they never change)?' (2008) 923 *PLI/Pat* 367.

⁴¹ USPTO *Interim Guidance for Determining Subject Matter Eligibility for Process Claims in View of Bilski v V Kappos* Federal Register / Vol. 75, No. 143 / Tuesday, July 27, 2010 / Notices 43922 at 43925 - 43926. These Guidelines supplement the *Interim Examination Instructions for Evaluating Subject Matter Eligibility Under 35 U.S.C. § 101* issued by the USPTO in August 2009.

held that the computer program in issue was unpatentable because it was an abstract idea.⁴² The Board expressly cited the Supreme Court *Bilski* decision in its ruling.

3.2.2 The restrictive approach

Articles 52(2) and 52(3) of the EPC, s 1(2)(c) of the UK Patents Act and s 25(2) –(3) of the SA Patents Act provide for subject matter exclusions which exclude computer programs and business methods ‘as such’ from patentability. The crux of these sections is that computer programs and e-commerce business methods will not be treated as inventions and will not be patented if the application for the patent relates to the method or computer program ‘as such’. It is clear that the patentability of computer programs and e-commerce business methods turns on judicial interpretations of what is meant by the phrase ‘as such’. There is as yet no South African case law on the point but there is a significant body of EU and United Kingdom case law interpreting this phrase which is discussed below.

There is a marked distinction between the approach of the EPO and its Boards of Appeal (Boards) and the approach of the UKIPO and the UK courts to the patenting of computer programs and e-commerce business

⁴² *Ex parte Proudler* No. 2009-006599.

methods.⁴³ The United Kingdom is able to construct its own approach because the case law of the Boards of Appeal is merely persuasive and not binding in the United Kingdom.⁴⁴ According to the United Kingdom's Court of Appeal, at least three approaches to interpreting the limited computer program and e-commerce business method exclusion have emerged, namely the contribution, the technical effects and any hardware approaches.⁴⁵ Currently the EPO and its Boards are applying the any hardware approach whilst in the UK, the technical effects approach applies.⁴⁶ The two approaches currently in use are discussed below.

(a) The EPO's any hardware approach

Under the any hardware approach the Boards determine whether the claimed invention is related to any hardware. If the invention is related to hardware then it is not a computer program or an e-commerce business method as such. Three distinct variations of this approach have been developed. The first variant was used in 2000 in the *Pension Benefits* matter where the method in issue was a computer based system for calculating pension benefits. The Board held that even where the method

⁴³ David Bainbridge 'Court of Appeal parts company with the EPO on software patents' (2007) *Computer Law & Security Report* 199 at 200.

⁴⁴ See for example *Symbian v Comptroller* para 24 'but there is no question of the courts of this country being bound by decisions of the Board, any more than the converse.'

⁴⁵ *Aerotel Ltd v Telco Holdings Ltd, Macrossan's Patent Application* [2006] EWCA Civ 1371 (CA (Civ Div)) at para 26.

⁴⁶ James Boon 'UK software patents- Get with the program' (2009) 25 *Computer Law & Security* 367 at 368.

claim detailed the use of hardware it would be unpatentable but that the apparatus claim would not be excluded for being a method as such.⁴⁷ However, the apparatus claim would be unpatentable due to lack of inventive step. The method in this case was thus ultimately unpatentable.

The second variant of the any hardware approach is encapsulated in the 2004 Board decision in *Auction method/Hitachi*⁴⁸ where the business method at issue was an online Dutch or reverse auction. The Board, differing from *Pension Benefits* held that a method claim involving hardware would not be necessarily excluded from patentability.⁴⁹ However, under this test both method and apparatus claims would be unpatentable due to lack of inventive step. Therefore the invention in issue was not patentable.

The third variant is found in the 2006 decision in *Microsoft/Data transfer with expanded clipboard formats*.⁵⁰ This appeal related to Microsoft's clipboard functionality. The key enquiry under this test is 'whether there

⁴⁷ *Controlling pension benefits system /PBS Partnership* T 0931/95 (OJ EPO 2001, 441).

⁴⁸ T 258/03 (OJ EPO 2004, 575).

⁴⁹ At para.s 4.4 - 4.7.

⁵⁰ T 0424/03 (unreported) decided 23 February 2006.

is a claim to something “concrete” e.g. an apparatus’.⁵¹ If there is such a claim, then the invention is patentable. Differing from both *Pension Benefits* and *Hitachi*, this variant of the any hardware approach does not treat the invention as lacking inventive step. Applying this approach the Board held that claims 1(method) and 5 (apparatus) of the application did not relate to a computer program as such and were therefore patentable. The Boards have continued to apply this variant of the any hardware approach in cases such as *Duns Licensing Associates LP*⁵² *File search method/Fujitsu*,⁵³ *Gameaccount*⁵⁴ and *Sharp*.⁵⁵

These contradictory developments in the EPO’s approach have been lamented and cited as the reason why the United Kingdom has developed its own approach which is discussed below. ⁵⁶ The English courts have said that they are ‘not every enthusiastic about the prospect of having to track every twist and turn of the EPO’s reasoning’⁵⁷ and suggested that the matter be referred to the Enlarged Boards for clarification.⁵⁸ Similarly some appellants before the Boards sought permission to refer the interpretation of the ‘as such’ exclusion to the Enlarged Board. In

⁵¹ Aerotel para 26.

⁵² *Duns Licensing Associates LPT* 154/04 (2008 OJ EPO 46).

⁵³ *File search method/Fujitsu* T 1351/04 (unreported) decided 18 April 2007.

⁵⁴ *Gameaccount* T1543/06 (unreported) decided 29 June 2007.

⁵⁵ *Graphical user interface/Sharp* T1188/04 (unreported) decided 5 March 2008.

⁵⁶ William Cook and Geoff Lees ‘test clarified for UK software and business methods patents: but what about the EPO?’ (2007) 29 *EIPR* 115 at 116.

⁵⁷ *CFPH LLC’s Application* para 90.

⁵⁸ *Aerotel/Macrossan* para 75 - 76.

October 2008 the President of the EPO referred the patentability of computer programs to the Enlarged Board requesting clarification of the proper position with regard to the patenting of computer programs. However, the Enlarged Board rejected this referral and the opportunity to provide much-sought after clarification has been lost.⁵⁹

(b) The UK's technical effects approach

Under the technical effects approach, the key enquiry is 'whether the invention as defined in the claim makes a technical contribution to the known art'.⁶⁰ If the invention does not make a technical contribution, it is excluded from patentability. In 2006 the following four-stage enquiry for establishing technical effects was developed by the Court of Appeal in *Aerotel/Macrossan*:⁶¹

- (1) properly construe the claim
- (2) identify the actual contribution;
- (3) ask whether it falls solely within the excluded subject matter;

⁵⁹ Opinion of the Enlarged Board of Appeal of 12 May 2010, Case Number: G 0003/08. Available at <[http://documents.epo.org/projects/babylon/eponet.nsf/0/DC6171F182D8B65AC125772100426656/\\$File/G3_08_Opinion_12_05_2010_en.pdf](http://documents.epo.org/projects/babylon/eponet.nsf/0/DC6171F182D8B65AC125772100426656/$File/G3_08_Opinion_12_05_2010_en.pdf)> (accessed 11 September 2010). For commentary on this decision see Justine Pila 'Software patents, separation of powers, and failed syllogisms: A Cornucopia from the Enlarged Board of Appeal of the European Patent Office' (May 1, 2010). *Cambridge Law Journal* (forthcoming) Oxford Legal Studies Research Paper No. 48/2010. Available at <<http://ssrn.com/abstract=1612518>> (last accessed 16 April 2011).

⁶⁰ *Aerotel/Macrossan* at para 26. The inventions in issue were a method of making a telephone call (at para.s 50-52) and an automated method of obtaining the documents required to incorporate a company (at para 58).

⁶¹ *Aerotel/Macrossan* at paras 40 - 49.

(4) check whether the actual or alleged contribution is actually technical in nature’.

In Astron Clinica and others’ Application (2008)⁶² the High Court emphasised that under this approach method claims, apparatus claims and the computer program itself are patentable. Further in *Symbian Ltd’s Application* (2008)⁶³ the Court of Appeal stated that in its application of the technical effects approach, it was following *Vicom* and the two *IBM* cases and its own decisions in *Merryl Lynch* ([1989] RPC 561) and *Gale* ([1991] RPC 305).⁶⁴ It expressly eschewed the Board’s later decisions applying the any hardware approach in *Dun’s Application*, *Gameaccount*, *Sharp* and *File search method/Fujitsu*.

The technical effects approach was further amplified in *AT&T Knowledge Ventures LP v Comptroller General of Patents and CVON Innovations Limited v Comptroller General of Patents* (2009)⁶⁵ where the High Court

⁶² *Astron Clinica and others’ Application* [2008] EWHC 85 (Pat). The inventions (computer programs) in issue related to ‘a method of generating bit masks for use with laser printers’, ‘a system and process for generating realistic images representing the results of planned cosmetic or surgical interventions’, ‘methods of identifying groups of target proteins for drug therapy’, a method for improving the ability of mobile telephones to access services on the internet’ and a ‘method of generating data for configuring microcontrollers’ (at para.s 3 - 8).

⁶³ *Symbian Ltd’s Application* [2008] EWCA Civ 1066. The computer program in issue was a ‘method of accessing data in a dynamic link library in a computing device’ (at para 2).

⁶⁴ At para 49.

⁶⁵ *AT&T Knowledge Ventures LP v Comptroller General of Patents and CVON Innovations Limited v Comptroller General of Patents* [2009] EWHC 343 (Pat).

held it would be guided by the following ‘signposts’ in determining whether inventions had technical effect:⁶⁶

- i) whether the claimed technical effect has a technical effect on a process which is carried on outside the computer;*
- ii) whether the claimed technical effect operates at the level of architecture of the computer; that is to say whether the effect is produced irrespective of the data being processed or the applications being run;*
- iii) whether the claimed technical effect results in the computer being made to operate in a new way;*
- iv) whether there is an increase in the speed or reliability of the computer;*
- v) whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.’*

The UKIPO issued a series of three Practice Notes between 2006 and 2008 to reflect its approach following the *Aerotel/Macrossan*, *Astron Clinica* and *Symbian* decisions.⁶⁷ In summary, the current approach under the last two Practice Notices is that the UKIPO will not reject claims to a computer program or a program on a carrier as being caught by the ‘as such’ limitation and that it applies the structured approach outlined in *Aerotel/Macrossan* to assessing patent applications.

As is clear from the above, the United Kingdom’s approach is stricter than the EU’s approach because the EPO construes technical features

⁶⁶ At para 40.

⁶⁷ UKIPO Practice Notices ‘Patents Act 1977: Patentable subject matter’ dated 2 November 2006, 8 February 2008 and 8 December 2008.

very broadly under the any hardware approach whereas the United Kingdom's technical effects approach is more rigorous.⁶⁸

(c) The South African position

Numerous patents have been issued for computer programs in South Africa⁶⁹ but none of them have been litigated.⁷⁰ As the computer program limitation in the SA Patents Act is the same as that found in the EPC and UK Patents Act, it is reasonable to anticipate that it will be interpreted in a similar way to those jurisdictions. As there is a distinction between the two approaches, South African courts will have to choose between them. It has been predicted that whatever route they follow, our courts will steer clear of restrictive interpretation.⁷¹

As noted above, South Africa has a registration patent office that simply registers patents without substantive examination. Patents are valid until revoked by the courts. This means that it is up to the public or industry to initiate litigation to invalidate these patents. This is unsatisfactory and it is likely that weak patents will remain

⁶⁸ *CFPH LLC's application* para 43.

⁶⁹ See CIPRO searchable database at <http://patentsearch.cipro.gov.za>.

⁷⁰ There have been media reports of pending litigation pertaining to a mobile phone banking business method. For example see Business Report, 8 April 2010 'MTN Banking sued on patent: Inventor files R1bn claim for infringement', Also see the complainant's website - 3mfuture.com 'MTN Infringement' Available at <http://www.3mfuture.com/MTN_infringement.htm> (last accessed 4 March 2011).

⁷¹ Abramson 26.

unchallenged because of prohibitive litigation costs. The introduction of opposition proceedings may ameliorate the situation. Simply introducing substantive examination will raise the capacity problems outlined above. In short, where prior art searches are ineffective or inefficient, it will be difficult to determine whether the patent protection is meaningful. However, an opposition is likely to yield better results because industry rivals who would be knowledgeable about prior art initiate them. Indeed, they would only oppose a patent based on hard evidence of prior art. These options are considered in Chapter Six (at section 6.2).

3.2.3 Second tier patents

Second tier patent protection systems are intended to provide protection for inventions that do not meet standard patentability requirements, commonly referred to as sub-patentable inventions.⁷² Generally, these systems provide monopolistic property rights, without substantive

⁷² For example under the Australian Innovative Patent system instead of having an inventive step, an innovatioion is only required to have an 'innovative step'. Section 7 (4) of the Patents Act defines an innovative step as follows:

'an invention is to be taken to involve an innovative step when compared with the prior art base unless the invention would, to a person skilled in the relevant art, in the light of the common general knowledge as it existed in the patent area before the priority date of the relevant claim, *only vary from the kinds of information set out in subsection (5) in ways that make no substantial contribution to the working of the invention.*⁷²
(My emphasis)

The difference between the inventive step test and the innovative step test is that the latter lacks an enquiry as to whether or not the invention would have been obvious to a person skilled in the art. The test for establishing innovative step is set out in *Delnorth Pty Ltd v Dura-Post (Aust) Pty Ltd* [2008] FCA 1225 at para 52.

examination.⁷³ However, they have registration criteria that include novelty.⁷⁴ There are various forms of second tier patent protection worldwide⁷⁵ but this chapter discusses only those that provide protection for processes as it is only these that will extend protection to business methods. One such system is the Australian Innovative patent system.

Existing second tier patent systems simply issue patents for untested inventions without substantive examination. This creates an imbalance as the utilitarian justification for patents is that they are granted as rewards to inventors who have created useful inventions yet patent rights are being granted for inventions without testing their usefulness. Second tier patent systems try to correct this imbalance by granting patent protection for a relatively short time ranging from six to 15 years.⁷⁶ It is appropriate to limit the duration of protection out of recognition of the lower quality of inventions and substantive examination capacity problems in this way. However, this does not relieve the discomfort raised by allowing the enforcement of untested property rights.

⁷³ Uma Suthersanen and Graham Dutfield 'Utility models and other alternatives to patents' in Uma Suthersanen et al (eds) *Innovation Without Patents: Harnessing the Creative Spirit in a Diverse World* (2007)19 (hereafter Suthersanen and Dutfield 'Alternatives') have ascertained that all second tier patent systems exclude substantive examination prior to patent grant.

⁷⁴ Ibid.

⁷⁵ Suthersanen and Dutfield 'Alternatives' at 19 - 20 state that the major points of departure relate to the subject matter protected by the system, the granting procedure used and the substantive criteria for protection.

⁷⁶ Suthersanen and Dutfield 'Alternatives' 20.

The main cause for concern is that the system may result in ‘legal uncertainty and excessive litigation’.⁷⁷ Australia’s second tier patent system alleviates this discomfort by requiring substantive examination and certification before enforcement of an innovative patent.⁷⁸ An innovative patent can also be opposed after substantive examination and certification.⁷⁹

Second tier patent systems seem to generate less litigation than standard patent systems. For example the first case on second tier protection of e-commerce business methods was brought before Australian courts in 2008, seven years after the introduction of the second tier patent system.⁸⁰ However, because of the abstract nature of e-commerce business methods it is likely that the problems that have surfaced in standard patent systems will soon reveal themselves in second tier patent systems. This is because the problem is not mainly with the patent system but with the abstract nature of the technology being patented (see section 3.3.2 (b) below). In view of this, it is unlikely that introducing a second tier patent system in South Africa would be beneficial to

⁷⁷ Suthersanen and Dutfield ‘Alternatives’ 38.

⁷⁸ s 120(1A) Patents Act 1990 (Cth).

⁷⁹ s 101M.

⁸⁰ Wayne McMaster ‘the definition of innovative step- a judicial first’ 26 August 2008 Available at <<http://www.mallesons.com/publications/2008/Aug/9585883w.htm>> (last accessed 13 March 2011).

accommodation SMEs in the tourism industry. However rigorous research and consultation needs to be undertaken in South Africa to establish whether or not the introduction of a second tier patent system would indeed be beneficial.⁸¹

3.3 The computer program patent debate

This section highlights the policy issues that have arisen with respect to the patenting of computer programs for e-commerce business methods. It canvasses both the position of creators and users of e-commerce business methods. As stated in Chapter One accommodation SMEs may be either creators or users but are primarily users. The arguments presented below apply to any and all creators and users. Accommodation SMEs are therefore not used as a point of reference, and the section merely ‘speaks’ of creators and users. The section is crafted on the basis of the equitable IP model’s evaluation criterion set out at section 1.5 (d) above. In particular, it asks whether patent protection of computer programs is compatible with creator’s needs and practices by considering whether:-

1. Patents contribute to, or detract from, the commons from which ideas and functionalities are drawn.
2. Patents are an appropriate reward and incentive for programmers.
3. Patents are compatible with the nature of computer programs and the standard programming process.

⁸¹ Factors to be considered in such an investigative exercise are discussed in Suthersanen and Dutfield ‘Policy considerations for governments’ in Uma Suthersanen et al (eds) *Innovation Without Patents: Harnessing the Creative Spirit in a Diverse World* (2007) 64 - 69.

4. Patents are easy and affordable to acquire.

The section also takes a user's perspective and asks if patents benefit the user by making e-commerce business methods both affordable and accessible by fostering innovation and competition amongst creators.

3.3.1 Arguments in favour of patents

(a) Utilitarian theories

It is contended that computer programs and e-commerce business methods ought to be patented like any other inventions to reward their inventors like any others, as they too, have invested significant funds and effort into creating their inventions.⁸² However, this argument overlooks the fact that the abstract nature of computer programs and e-commerce business methods is very different from other inventions and that this distinction necessitates a different IP protection regime for computer programs and e-commerce business methods. The abstract nature of computer programs and e-commerce business methods is discussed below at section 3.3.2 (a).

Further, it is contended that computer program and e-commerce business method patents contribute to the public good by creating useful inventions and through the public disclosure of information pertaining to

⁸² Jeff Bezos 'open letter from Jeff Bezos on the subject of patents' Available at < http://oreilly.com/news/amazon_patents.html > (last accessed on 3 February 2011).

their inventions. Such information may then be used by other inventors to spur further innovation. It is also argued that the reward given to such inventors spurs others to invent as well. Such public disclosure and incentives are said to contribute to economic development because they spur innovation. However, the value of such disclosures is disputed and seems to have been overstated. This is because such disclosure is often inadequate and of limited teaching value due their vagueness.⁸³ As will be shown at section 3.3.2 (b) below, this vagueness is directly attributable to the abstract nature of computer programs. Further, the source code of patented computer programs does not have to be disclosed in patent specifications⁸⁴ which means that there is no comprehensive human-readable description of computer programs filed of record in patent offices.

Further, as will be shown below (at section 3.3.2(c)), these utilitarian theories seem to be irreconcilable with the negative effects of computer

⁸³ Devlin 'disclosure in Patent Law' at 403: the extent to which patent documents successfully teach the inner workings of cutting-edge technologies is quite limited. The information conveyed by many specifications is inadequate and, in practice, fails to reflect the legislative requirements of § 112. Indeed, a majority of patents do not convey meaningful information of any kind. Patents in the information technology ("IT") industry are perhaps the worst offenders, being notorious for their vague language'. Also see Tomkowicz 223.

⁸⁴ Tomkowicz 229, Sara Boettiger and Dan L Burk 'Open source patenting' (2004) 1 *Journal of International Biotechnology Law* 221 at 224. Available at <<http://ssrn.com/abstract=645182>> (last accessed 15 April 2011) (hereafter Boettiger and Burk).

program and e-commerce patents.⁸⁵ Moreover, this argument is somewhat weakened by the fact that patents are not the sole means of encouraging innovation and economic development.⁸⁶ Most significantly, it has been proven that the software industry experienced high levels of innovation and growth before computer program patents became widespread which indicates that patents may not be not the major driver of innovation in this industry.⁸⁷

(b) International obligations

The TRIPS Agreement has been cited as authority for the assertion that business methods, like any other invention, are worthy of patent protection and should not be excluded from patenting solely because of their field of applicability.⁸⁸ This is because art 27(1) provides:

‘Subject to the provisions of paragraphs 2 and 3, patents shall be available for *any inventions, whether products or processes, in all fields of technology*, provided that they are new, involve an inventive step and are capable of industrial application. Subject to paragraph 4 of article 65, paragraph 8 of article 70 and paragraph 3 of this article, patents shall be available and patent rights enjoyable *without discrimination as to the*

⁸⁵ Andrew Nieh ‘Software wars: the patent menace’ (2010) 55 *New York Law School Review* 295 at 309.

⁸⁶ Barrat ‘22 listing ‘prestigious academic appointments, state grants, or the possibility of fame and prizes’ and ‘curiosity or altruism’ as other incentives for innovation.

⁸⁷ Robert M Hunt ‘You can patent that? Are patents on computer programs and business methods good for the new economy?’ (2001) *Business Review* 9, at 9 (hereafter Hunt ‘You can patent that?’), Likhovski et al ‘The first mover monopoly: a study on patenting business methods in Europe’, WP 05/00, OIPRC *Electronic Journal of Intellectual Property Rights* 9 at 30 - 32 (hereafter Likhovski et al ‘First mover monopoly’).

⁸⁸ Ryan 24, McNamara and Craddock 112 - 113.

place of invention, *the field of technology* and whether products are imported or locally produced.’ (My emphasis)

Articles 27(2) and 27(3) do not list business methods as one of the permitted exclusions⁸⁹ so states cannot exclude them from patent protection if they meet patentability criteria. However, as art 27 does not provide a definition of an ‘invention’, it is possible for states to exclude e-commerce business methods on the argument that they are not inventions.⁹⁰ For example art 52(2) of the EPC provides that computer programs and business methods ‘as such’ are not inventions as discussed above at section 3.2.2. Further, even if they are inventions they are not

⁸⁹ These articles provide as follows:
Art 27(2) Members may exclude from patentability inventions, the prevention within their territory of the commercial exploitation of which is necessary to protect ordre public or morality, including to protect human, animal or plant life or health or to avoid serious prejudice to the environment, provided that such exclusion is not made merely because the exploitation is prohibited by their law.
Art 27(3) Members may also exclude from patentability:
(a) diagnostic, therapeutic and surgical methods for the treatment of humans or animals,
(b) plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an effective sui generis system or by any combination thereof. The provisions of this subparagraph shall be reviewed four years after the date of entry into force of the WTO Agreement.

⁹⁰ David Vaver ‘Invention in patent law: a review and a modest proposal’ (2003) *International Journal of Law and Information Technology* 286 at 289 - 290, 292, Paul Hartnack, Comptroller General, The Patent Office ‘Chairman's Opening Remarks’ Software Patents in Europe Conference (23 March 1998):’ Some have argued that the TRIPS agreement requires us to grant patents for software because it says "patents shall be available for any inventions.....in all field of technology, provided they are.....capable of industrial application". However, it depends on how you interpret these words. Is a piece of pure software an invention? European law says it isn't. Is pure software technology? Many would say no. Is it capable of "industrial" application? Again, for much software many would say no.’ Available at <<http://web.archive.org/web/20010608115154/http://www.patent.gov.uk/about/ip/pd/softpat/1000.htm>> (last accessed 14 March 2011).

entitled to patent protection unless they meet patentability criteria. Therefore, it seems that art 27 does not compel states to patent e-commerce business methods, or other kinds of computer programs.⁹¹

3.3.2 Arguments against patents

There are four main arguments against patents for computer programs, which are outlined below.

(a) Poor patent quality

First, the quality of these patents is questioned because it is argued that patent offices lack adequate capacity to carry out meaningful substantive examinations of patent applications as patent examiners lack both relevant knowledge and experience. In addition, the paucity of prior art resources to which patent examiners can refer during substantive examinations further compromises the quality of these patents.⁹² There have been many attempts to overcome this drawback in jurisdictions which conduct substantive examinations. For example the USPTO has reviewed its examination processes, runs training programs for its examiners, maintains prior-art databases and engages with industry and

⁹¹ APS Van der Merwe 'Business methods, technology and patentability' 2006 *THRHR* 122 at 132 – 133.

⁹² McNamara and Craddock 112.

society.⁹³ An example of such co-operation is the 'Peer-to-Patent: Community Patent Review' which reviewed 40 computer program patent applications, of which 23 were finalised by the USPTO in its first year of operation. Input through this project resulted in the rejection of nine of these patent applications by the USPTO.⁹⁴ Considering these initiatives, it is fair to assert that the shortfalls relating to prior art availability and examiner inadequacies in the United States have been reduced but not eliminated.

However, this reduction of examination related inadequacies has not reduced the problems related to computer program and e-commerce business method patents. In fact, Bessen and Meurer show that these problems are worsening with the passage of time.⁹⁵ They assign this to the fact that the real problem with these patents was not only examination inadequacies but also the abstract nature of computer program and e-commerce business methods themselves.

⁹³ USPTO Press Release #00-41 29 June 2009 Available at <<http://www.uspto.gov/news/pr/2000/00-41.jsp>> (last accessed 19 March 2011), USPTO *White paper on automated financial or management data processing methods (business methods)*, Charles Reidelbach 'Businesses apply in droves to patent their methods' (2001) 22 *San Diego Business Journal* 22 at 23.

⁹⁴ Centre for Patent Innovations, New York Law School *Peer-to-Patent First Anniversary Report* (2008) 6 Available at <<http://dotank.nyls.edu/communitypatent/P2Panniversaryreport.pdf>> (last accessed 19 March 2011).

⁹⁵ Bessen and Meurer *Patent Failure* 193.

The incidence of weak patents is higher in states that have registration patent offices that simply register standard or second tier patents without substantive examination. South Africa simply registers standard patents and does not have pre-grant opposition proceedings which would enable some indirect examination of contested patent applications. Hence the suggestion that such the SA Patents Act be amended to provide for opposition or peer review before patent grant is made at section 6.2.1 (a) (ii) below.

(b) The abstract nature of computer programs and e-commerce business methods

The second objection against patents for e-commerce business methods is that the abstract nature of computer programs and e-commerce business methods makes patent protection inappropriate. These methods and computer programs are said to be unsuitable candidates for patent protection because they are 'too abstract to allow the law to limit the patent monopoly so as to adequately balance the rewards for creativity and the demands of free competition'.⁹⁶ Further, patent claims relating to computer programs and e-commerce business methods tend to be phrased in vague and abstract terms.⁹⁷ Experts in the field have admitted that even they do not always know what is meant by such

⁹⁶ Likhovski et al 'First mover monopoly' 30 - 32, Bessen and Meurer *Patent Failure* 22, 187, 200 – 203.

⁹⁷ Bessen and Meurer *Patent Failure* 195 and 200.

terms.⁹⁸ This makes interpreting patent claims more difficult for courts and is more likely to lead to the validation of sub-patentable computer programs and e-commerce business methods. In Dreyfuss' words

‘what judges don't understand they think is patentable- there is kind of a “gee wiz” factor that is hard to overcome. In contrast, what judges do understand (or think they should pretend to understand), appears obvious – an “I could have done that” view takes hold instead. That is important in this context because it is rather probable that judges do not understand (or bother to pretend they understand) the internet or software. Thus, we can certainly expect fairly widespread validation of at least certain classes of business method patents’.⁹⁹

Further, it is contended that patent attorneys intentionally draft vague claims to enable their clients to assert their rights against future inventors of computer programs or e-commerce business methods that can be described in the same terms.¹⁰⁰ Such behaviour detracts from the value of disclosures made in patent specifications. In other cases it is said that no such intention existed when the patent claims were drafted but they were then used against subsequent inventions later when it became apparent that they could be wielded against these other inventions.¹⁰¹ Bessen and Meurer argue that the courts have been unable to use existing doctrines, such as the requirement that an

⁹⁸ Bob Jolliffe ‘The word-processing patent - a sceptical view from a person having ordinary skill in the art’ (2005) 35 *SACJ*2, Bessen and Meurer *Patent Failure* 198.

⁹⁹ Dreyfuss ‘Bad for business?’ 270.

¹⁰⁰ Bessen and Meurer *Patent Failure* 200.

¹⁰¹ AtBessen and Meurer *Patent Failure* 196.

invention must bring about a physical transformation, to contain the problems caused by the abstract nature of patents.¹⁰²

(c) Incompatibility with programming practices and the software industry

Thirdly, it is important to highlight that patents cause inefficiencies in the programming process and in fact run counter to preferred practices such as modularisation.¹⁰³ Modularisation is credited with beginning the main driver of growth in the personal computer (PC) industry in Japan¹⁰⁴ which is one of the leading innovation centres for the PC industry. When patents are held over modules this introduces inefficiency into programming practices because of the need to secure licenses or to workarounds the patented modules. Where workarounds have to be created this may cause problems with inter-operability. Further, these workarounds may compromise ease-of-use of the final product.¹⁰⁵ Where a license to use patented technology is not obtained and a workaround is not sought and other creators simply copy or emulate the patented technology, infringement litigation is sure to follow.

¹⁰² Bessen and Meurer *Patent Failure* 204.

¹⁰³ Modularisation is 'the division of a complex task into a series of simple tasks that can be carried out by essentially autonomous modules that communicate through standard interfaces' per Steve Weber, *The Success of Open Source* (2004) 26.

¹⁰⁴ Kiminori Genba, Haruhisa Ogawa, and Fumio Kodama, 'Quantitative analysis of modularisation in the automobile and PC industries' (2005) 17 (2) *Technology Analysis & Strategic Management* 231 at 234.

¹⁰⁵ Peter S Menell 'Tailoring Legal Protection for Computer Software' (1986-1987) 39 *Stanford Law Review* 1329 at 1369 (hereafter Menell (1986)): 'documentation and ease of use are the most important selection criteria among application software users'

For example, Amazon.com held a patent over the 1click expedited online shopping method,¹⁰⁶ which was emulated by Barnesandnoble.com's Express Lane method. Amazon.com sued Barnesandnoble.com for patent infringement,¹⁰⁷ and the matter was eventually settled out of court with the payment of royalties to Amazon.com.¹⁰⁸ The functionality in question (expedited online purchasing) is so primary and has potential application across a number of areas such as borrowing e-books from a library to filling repeat prescriptions online that it ought to be modularised and shared freely. This would promote programming efficiency. Amazon.com's behaviour ran counter to such ideals and its enforcement of its patent rights was therefore met with derision, as shown by Tom O'Reilly's statement quoted at the beginning of this chapter.

The software industry is fast-paced. Markets and advances in technology 'evolve rapidly' and computer programs have a short shelf life.¹⁰⁹ In addition, frequent updates and new versions are released, often within a

¹⁰⁶ Amazon's 1-click invention is protected by the 5,960,411 patent. It is a process that enables a repeat customer to purchase an item with a single click of his or her mouse. Such a repeat customer does not have to provide his or her address, shipping preferences, credit-card number and other similar information because it would have been captured and stored on a database during the customer's first purchase.

¹⁰⁷ *Amazon.com Inc. v Barnesandnoble.com Inc.* 73 F.Supp.2d 1228, *Amazon.com Inc. v Barnesandnoble.com Inc.* 239 F.3d 1343.

¹⁰⁸ Hall 'innovation and policy' 24.

¹⁰⁹ Lemley et al *Software & Internet Law* 30.

year of first release.¹¹⁰ Accordingly, programmers do not need long-term protection such as patents, rather short-to medium-term protection is more appropriate.¹¹¹ A related point is the reach of patents beyond the initial computer program to generations of follow on programs. Such an extension is likely to ‘retard’ the ‘rapid incremental innovation’ that is the hallmark of the software industry.¹¹² The ‘relatively low fixed low costs’ of computer program development and its short shelf life makes the ‘ratio of innovation cost to the cost of follow-on competition low’ and therefore reduces the need for ‘strong patent protection’ for the software industry.¹¹³ Finally, the delays attendant on the acquisition and enforcement of patents also make patent protection unsuitable for computer programs as these delays may well be longer than the shelf-life of the computer program in issue.¹¹⁴

(d) Negative economic effects

The third argument against patent protection for computer programs and e-commerce business methods relates to the effect of such patents on economies. It is argued that these patents do not bestow enough benefits

¹¹⁰ Ibid.

¹¹¹ Ibid.

¹¹² Mark A Lemley and Dan L Burk ‘Policy levers in patent law’ (2003) *89 Virginia Law Review* 1575 at 1623. Available at <<http://ssrn.com/abstract=431360> or doi:10.2139/ssrn.431360> (last accessed 15 April 2011) (hereafter Lemley and Burk)

¹¹³ Lemley and Burk 1622.

¹¹⁴ Peter S Menell ‘Tailoring legal protection for computer software’ (1986-1987) 39 *Stanford Law Review* 1329 at 1350 (hereafter Menell (1986)).

on society to justify the costs they impose. From a utilitarian and public interest perspective, there are three main benefits that society should gain from patents. These are (in order of importance) increased innovation and economic growth (as spurred by an efficient patent system that is seen to grant deserved and appropriate patent rights), a useful tool to use (the patented invention) and information (through disclosure in the patent specification), These benefits should outweigh any costs, such as application¹¹⁵ and litigation costs, attendant on the patent system. The most obvious way to test this argument is engaging in a cost-benefit analysis. However, this is easier said than done because there is no conclusive evidence relating to both the costs and the benefits of these patents generally in South Africa.¹¹⁶ It is thus almost impossible to make definitive statements. At best, one can only highlight the key observations that have been made in other jurisdictions.

There is contradictory evidence as to the benefits that have accrued from computer program patents. As noted above at section 3.3.1 (a), it is argued that because the software industry was characterised by rapid innovation before patent protection became widespread, these patents

¹¹⁵ Details of patent registration costs are given at section 3.4 below.

¹¹⁶ Only the 2009 WIPO Study on the *Economics of Intellectual Property in South Africa* has considered the economics of IP protection in South Africa. However, it does not focus on the software industry and is therefore of limited relevance to this thesis.

have not had a positive impact on innovation.¹¹⁷ It is also argued that widespread computer program patents create patent thickets¹¹⁸ that prevent other creators from efficiently creating alternate computer programs. Accommodation SMEs or other creators who wish to develop their own methods may find that they are unable to do so due to patent thickets that have sprouted around the methods and related technology.¹¹⁹ Where such a situation prevails the relevant patents are failing to meet their primary public policy purpose of encouraging innovation.¹²⁰ This shortcoming outweighs the benefits that accrue from

¹¹⁷ Hunt 'You can patent that?' 9, Likhovski et al 'First mover monopoly' 30 – 32, Andrew Gowers, *Gowers Review of Intellectual Property* (HM Treasury, 2006).75 para 4.114 – 4.115 (hereafter Gowers Review), James E Bessen and Eric S Maskin 'Sequential innovation, patents, and imitation' (January 2000). MIT Dept. of Economics Working Paper No. 00-01 at 2. Available at <<http://ssrn.com/abstract=206189> or doi:10.2139/ssrn.206189> (last accessed 15 April 2011).

¹¹⁸ Richard Stim *Patent, Copyright & Trademark: An Intellectual Property Desk Reference* (2007) 104 provides the following definition: 'A patent thicket is a collection of patents - often owned by different companies - that must be licensed in order to commercialise a new technology. The name refers to the fact that new companies in a tech industry must "hack" their way through in order to get into the market place. For example companies performing gene research often encounter a network of overlapping patent rights. A patent thicket has the effect of limiting the players in an industry and because of that it raises antitrust concerns.' Also see James E Bessen 'Patent thickets: strategic patenting of complex technologies' (Working paper, 2003) Available at <<http://www.researchoninnovation.org/thicket.pdf>> (last accessed on 18 March 2011).

¹¹⁹ This indirect effect of patenting is explained in Maskin, Eric 'Public goods and public science' in Maskus and Reichman (eds) *International Public Goods and Transfer of Technology under a Globalized Intellectual Property Regime* (2005) 139. (hereafter Maskin 'Public goods').

¹²⁰ Alan Devlin 'The misunderstood function of disclosure in Patent Law' (2010) 23 *Harvard Journal of Law & Technology* 401 at 404 (hereafter Devlin 'disclosure in Patent Law'):
'the patent regime should primarily be construed as a tool for incentivizing the invention and commercialization of easily appropriated technology... disclosure should be treated merely as an ancillary feature of the patent system'

the often limited disclosure of the invention made in the patent application. On the other hand, some commentators have asserted that patents for computer programs and e-commerce business methods have real potential to stimulate progress.¹²¹

Evidence of the costs associated with computer program patents appears to weigh in more clearly against computer program patents. It is argued that the abstract nature of computer programs and e-commerce business methods results in increased litigation. Some research has shown that computer program patents are twice as likely, and e-commerce business methods are seven times more likely, than other patents to be litigated.¹²² Patent litigation is generally very costly and often protracted, it is thus wasteful. Further, such wasteful litigation is likely to stifle the development of new technology because inventors may decide to opt-out of an industry that appears heavily burdened by legal uncertainty and its associated financial costs. In some cases an inventor may be willing to take this risk and accept that litigation on their invention is probable. However in such cases the stakes are raised by the fact that the outcomes

¹²¹ David Bender 'An alternative view' (2001) 3 *Computer und Recht International* (CRI) 65 at 68, JR Allison & EH Tiller 'Internet business methods' (October 2002) *Texas Business Review* 1. Also see John R Allison and Ronald J Mann 'The Disputed Quality of Software Patents' (March 2007). University of Texas Law and Econ Research Paper No. 97 Available at <<http://ssrn.com/abstract=970083>> (last accessed 15 April 2011).

¹²² Bessen and Meurer *Patent Failure* 22. Hall 'Innovation and policy' 11, Gerard N. Magliocca 'Patenting the curve ball: Business methods and industry norms' (2009) *Brigham Young University Law Review* 875 at 886 - 87.

of litigation in this area have been faulted as being too dependent on judges' subjective views and knowledge.¹²³

Where costs are high and benefits are contested, it is likely that SMEs are most likely to be disadvantaged.¹²⁴ This is because patents may place some computer programs and e-commerce business methods beyond the reach of SMEs if they are unable to negotiate permission or afford licenses to use them. Prices will generally be high in a market that places restraints on innovation because the supply of goods will be low. Consequently, some SME's tourism businesses may fail for want of access to effective e-commerce business methods. As argued at section 1.5.1 (b) above, this may be in breach of the constitutional right to practice a trade or occupation of one's choice. However, such constitutional rights do not mean that free access is to be granted to users but rather that reasonable prices should be set, particularly in a developing economy like South Africa which prioritises the growth of small businesses. SMEs that wish to create their own methods or computer programs may find that they are unable to do so as the building blocks or key components have been locked away by these patents.¹²⁵

¹²³ Rochelle Cooper Dreyfuss 'Are business method patents bad for business?' (2000) 16 *Santa Clara Computer and High Technology Law Journal* 263 at 270.

¹²⁴ McNamara and Craddock 114 - 115.

¹²⁵ Maskin 'Public goods' 139.

3.4 Impact of the patenting of e-commerce business methods on accommodation SMEs

This section discusses the impact of patenting e-commerce business methods under both standard and second tier patent protection systems. It considers both the effects of the restrictive and liberal approaches to standard patents together. The only distinction in the impact under these approaches is one of degree, with the effects being more pronounced under a liberal approach. This is because more patents are likely to be granted or upheld in a liberal regime which would magnify the negative effects of such patenting.

Standard patent protection of e-commerce business methods disadvantages accommodation SMEs as both creators and users for a number of reasons. Firstly, patent protection is costly¹²⁶ and is thus

¹²⁶ Only attorneys are permitted to file complete patent specifications (the standard filing fee for which is R590). The fee payable by an individual or enterprise filing his/its own provisional patent application is R60. See CIPRO 'Patents: Registration Procedure' Available at < http://www.cipro.gov.za/products_services/patents_registration.asp > (hereafter CIPRO 'Patents: Registration Procedure'). However, due to the expertise required in drafting the patent specification and other registration documents, it is advisable to retain the services of an attorney to handle patent registration. Establishing the exact cost of attorney-assisted patent registrations is difficult because it is generally kept between attorney and client. However, some estimates are provided by some law firms on their websites. For example as at 12 April 2011, Sibanda & Zantwijk IP Attorneys' online patent drafting and filing services are fixed at R4950 and their patent search fee at R2750 per MyPatent.co.za 'How to reduce your patent costs' Available at < <http://www.zaiplaw.co.za/mypatent.co.za/content/view/52/27/>>, Smit & Van Wyk Attorneys estimate their fees to range between R7000 – R12 000 per Smit & Van Wyk 'Patent Registration' Available at < <http://www.svw.co.za/et-patent-registration.html> > and Adams & Adams state that their provisional patent registration fees for simple to average matters will range between R10 000 –

beyond the reach of accommodation SMEs (as creators) who would be unable to obtain patent protection even for worthy or patentable inventions. Second, even in those cases where the business method meets patentability criteria and an accommodation SME has enough resources to secure a patent, patenting would be unfair because of its negative effects on the economy. For example, if a patent is registered over a method in South Africa, other businesses may be unable to use the method if prohibitive licensing fees are charged and the patent holder behaves in an anti-competitive manner. If a proliferation of methods is registered, it may soon become impossible to operate an online shop without obtaining licenses from numerous patent holders (patent thickets).¹²⁷ This is clearly to the disadvantage of accommodation SMEs that are primarily users of methods. Third, these patents will have a dampening effect on further innovation because the patent thickets also affect other innovators who would need to negotiate and obtain numerous licenses to access core functionalities.

R20 000 and between R20 000 – R30 000 for more complex matters Charges for a complete application following provisional applications filed by Adams and Adams will be an additional R10 000 –R20 000. Separate fees are levied for searches which are estimated to range between R5000 – R10 000 per Adams & Adams Local Patents Pamphlet (March 2011) at para.s 8 and 13 Available at <http://www.adamsadams.com/images/uploads/P114_PATENTS_FOR_INVENTIONS_LOG1.pdf> (all last accessed 12 April 2011).

¹²⁷ See the Foundation for a Free Information Infrastructure (FFII)'s graphic example 'Your webshop is patented' Available at <<http://webshop.ffii.org/>> (last accessed 20 March 2011).

Fourth, another disadvantage of patent protection for creators is the lengthy duration of the patent registration process. According to CIPRO the estimated duration of the processing of a complete patent application is six months.¹²⁸ However, at least two more months must be added to this period for the publication of the patent in the Patent Journal and the issuance of the registration certificate.¹²⁹ In reality, the registration process takes much longer as there is a substantial backlog at the SAPO.¹³⁰ This makes patent protection ill-suited for the fast paced software industry because the industry is constantly evolving and in a state of flux. Patenting is not viable because by the time the lengthy procedures for securing a patent are completed, that innovation may be obsolete. This is compounded by the fact that the computer programs in this context are intended for use on the internet, to drive e-commerce business methods. The speed with which online marketing and retailing advancements occur may well mean that by the time a patent is secured, other more viable e-commerce business methods have been developed by an accommodation SME's competitors.

¹²⁸ CIPRO 'Patents: Registration Procedure'.

¹²⁹ Ibid.

¹³⁰ Kaplan 3: 'It is not possible to get an accurate picture of the current backlog, but it is substantial. As an indication, local patent attorneys report that while registering a provisional patent is quick and effective, there are substantial delays in other areas. For example, obtaining a file to undertake a patent search may take up to a year...'

Finally, another disadvantage of patent protection for both creators and users is the lack of substantive examination of patent applications by the SAPO. As noted above (at section 3.2.2 (c)), this creates uncertainty as to the validity of patents which may hamper innovation as creators are likely to be hesitant to commercialise untested inventions locally or internationally.¹³¹ Further, creative efforts and follow-on commercialisation by patent holders are likely to be deterred by the spectre of the high-cost litigation that may be required in the future to validate the patents in question. On the other hand, these patents will deter competing creators from innovating because of the threat of infringement proceedings being instigated against them by patent holders. Users will suffer in a market that is hampered in this way because there will be fewer (and probably more expensive) methods on the market.

Were it available in South Africa, second tier patent protection would be more beneficial to those accommodation SMEs that create methods because (following international norms) it would be relatively cheaper,

¹³¹ Kaplan 3.

easier and faster to obtain than standard patent protection.¹³² However, it would have the same impact as standard patents on users of patented e-commerce business methods and other innovators who wish to draw upon the patented methods.

3.5 Conclusion: An equitable approach

This chapter has considered patent and second tier patent protection for computer programs for e-commerce business methods. Weighing the two sides of the computer program patent debate against each other using the equitable IP model constructed in Chapter One, it appears that the more convincing stance is that against patents for computer programs. This is because these patents have significant negative economic effects. These effects include the limited disclosure they provide and their minimal usefulness as a tool for incentivising invention. In addition, the abstract nature of computer programs signals the need to use patents with extreme caution.

Patents have emerged as a poor choice for accommodation SMEs either as creators or users. For SMEs that have created their own methods which they wish to patent, the patent system is disadvantageous due to its

¹³² Suthersanen and Dutfield 'Alternatives' 38. For example Australia grants innovative patents within a month of application (per IP Australia 'The innovation patent' Available at <http://www.ipaustralia.gov.au/patents/what_innovation.shtml> (last accessed 13 March 2011).

related expenses, delays and legal uncertainty. For accommodation SMEs that are primarily users of e-commerce business methods the major problem is that patents may preclude their use of certain methods due to difficulties with licensing and this may ultimately deny some SMEs the opportunity to operate at all or at optimal levels.

SMEs which intend to create their own methods will battle with the patent system's anti-innovation effects where key technology or innovations have been fenced off by patent thickets. SMEs are likely to be unwilling to risk innovating for fear of patent infringement litigation in an environment where there is legal uncertainty. Further, these SMEs will be disadvantaged by the limited usefulness of the knowledge made available in patent documentation. This means that they will be unable to springboard their own innovations from existing patents.

Finally, the fact that in the United States (considered the most lenient jurisdiction) the tide seems to be turning towards a stricter approach is indicative of an acknowledgement that wholesale and indiscriminate patent protection of computer programs and e-commerce business methods is not in the public interest.

Second tier patents are a better alternative than patents because they are more accessible to accommodation SMEs (as creators) and mitigate some of the harsher effects of the patent system for SMEs that are primarily users of methods and those who wish to use existing methods as springboards for their own inventions. Particularly, they offer protection over a shorter duration and have reduced patentability criterion. This means that incremental innovations that are likely to be generated by SMEs are protected albeit for a short period of time. However, for users a second tier system has the same disadvantages as a standard patent system. Therefore, it is worth considering alternatives to both standard and second tier patent protection. To this end, Chapters Four and Five discuss copyright, trademark and trade secret protection. Chapter Six (at section 6.2.1) considers other alternatives such as FOSS, *sui generis* protection and other possible improvements to the patent system. These improvements include the introduction of a pre-grant patent opposition procedure, statutory provision for a limited reverse engineering right and the judicial use of suitable policy levers to enable a more equitable balancing of creator and user interests.

Chapter Four: Copyright and Trademark Protection

This two-part chapter discusses copyright and trademark protection of e-commerce business methods. These two types of protection are considered together because they relate to written or otherwise fixed descriptions or presentations of, or marks, logos or symbols associated with, an e-commerce business method. In this way, they are clearly distinguishable from the standard and second tier patents discussed in Chapter Three because those alternatives only address the functionality of the method. However, copyright protection has the potential to extend to the functionality of e-commerce business methods due the hybrid nature of computer programs which incorporates both expressive and functional aspects. Trademark protection is much more limited than copyright protection because it does not have similar potential. It thus does not warrant expansive exploration, therefore, this chapter does not give equal treatment to copyright and trademarks.

Part A of this chapter discusses copyright protection of e-commerce business methods. Part A comprises of five parts. Part 1 (section 4.1) outlines copyright protection in general. Part 2 (section 4.2) then focuses on the copyright protection of e-commerce business methods and examines whether protection of the expressive elements can be stretched

to encompass the functionality or idea behind the method. Part 3 (section 4.3) is an overview of the position in the United States, the United Kingdom and South Africa with regard to non-literal copying. The fourth part (section 4.4) presents the computer program copyright debate and the next part (section 4.5) considers the impact of copyright protection of e-commerce business methods on accommodation SMEs. The final part (section 4.6) summarises and concludes Part A.

Part B of this chapter very briefly canvasses trademark protection for e-commerce business methods in South Africa in three sections. The first part (section 4.7) provides a snapshot of the trademark protection available in South Africa. The next part (section 4.8) discusses statutory trademark protection. The third part (section 4.9) considers common law protection and offers some thoughts on how the law of passing off could be used to protect the look and feel of a website. An examination of South African case law, an overview of trademark protection in other jurisdictions and the policy considerations underpinning trademark law are not necessary because of the very limited protection trademarks offer to e-commerce business methods. Some trademarks may be incorporated into domain names but domain names are not discussed in this chapter

because they offer similarly limited protection to e-commerce business methods. Section 4.10 then concludes the chapter.

PART A

4.1 Copyright

Copyright law has the dual ‘economic instrumentalist’ purpose of enabling ‘the orderly production and distribution of, and access to, works of art and intellect’.¹ The law therefore secures rewards, through control, to authors to encourage them to produce work for the benefit of society.² An author controls his or her work through statutory rights to exploit his or her work for profit or to permit or prevent others from doing the same.³ The main benefit to society is the improvement of its ‘knowledge, entertainment and cultural experience’⁴ as a result of access to copyright protected works. In addition, society benefits from the ideas and

¹ Daniel J Gervais ‘The purpose of copyright law in Canada’ 2005 *University of Ottawa Law and Technology Journal* 316 at 317, Stacey L Dogan and Joseph P Liu ‘Copyright Law and subject matter specificity: the case of computer software’ (2005) 61 *NYU Annual Survey of American Law* 203 at 203 and 206 (hereafter Dogan and Liu).

² Alan Smith (1995) *Copyright Companion* 1 (hereafter Smith *Copyright Companion*), OH Dean *Handbook of South African Copyright Law* (loose-leaf) (1987 last revised 2006) 1-1 - 1-2 (hereafter Dean *Copyright*), Vanessa van Copenhagen ‘Copyright and the WIPO Copyright Treaty, with specific reference to the rights applicable in a digital environment and the protection of technological measures’ 2002 *SALJ* 429 at 430.

³ Somesh K Mathur ‘Trade-related aspects of intellectual property rights and copyright provisions: some issues with special reference to developing countries’ 2003 *Journal of World Intellectual Property* 65 at 74 (hereafter Mathur), Dean *Copyright* 1-33.

⁴ Tobias Schonwetter ‘The implications of digitizing and the internet for ‘fair use’ in South Africa’ unpublished LLM UCT thesis (2005) 1 (hereafter Schonwetter ‘Fair use’).

functionality related to, or contained in, the protected works.⁵ These ideas and functionality remain in the public domain,⁶ provided they are not protected by other forms of IP protection that preclude their disclosure such as trade secrets.

Copyright is the ‘exclusive right in relation to work⁷ embodying intellectual content ... to do or to authorise others to do certain acts in relation to that work, which acts represent in the case of each type of work the manners in which that work can be exploited for personal gain or profit’.⁸ The copyright holder has exclusive economic⁹ and moral rights¹⁰ in the protected work for the specified statutory period in a

⁵ Dogan and Liu at 206.

⁶ See for example *Baker v Seldon* 101 US 99 (1879) at 102, *Brief English Systems v Owen* 48 F 2d 555 (2d) at 556.

⁷ Dean *Copyright* 1-5.: A work is subject matter of ‘sufficient substance’ to warrant copyright protection. A combination of an objective test and the consideration of relevant subjective factors is used to determine whether or not subject matter has this necessary quality for copyright protection. Public policy considerations are also important, since a decision that certain subject matter is a work will restrict others’ use of that subject matter. If the subject matter in issue is ‘commonplace’, ‘trite’ or ‘trivial’ it would be unfair to grant it the status of a work. See also David I Bainbridge *Intellectual Property* 8 ed (2010) 44- 48 (hereafter Bainbridge *Intellectual Property*).

⁸ Smith *Copyright Companion* 1 - 1. An alternative definition is provided by the UK Copyright, Designs and Patents Act (CDPA) of 1988 which defines copyright as a property right which subsists in ‘original literary, dramatic, musical or artistic works, sound recordings, films or broadcasts and the typographical arrangement of published editions’.

⁹ These exclusive rights include copying, distributing, renting or lending, performing and adapting the work. See for example, s 16(1) CDPA and ss 6 – 11B of the South African (SA) Copyright Act 98 of 1978.

¹⁰ Being the rights to attribution and integrity, see s 106a Copyright Act of 1976 (Title 17 of the US Code) (US Copyright Act), ss 77 -82 CDPA and s 20 SA Copyright Act.

specific jurisdiction. Any unauthorised¹¹ exploitation of a work that is protected by copyright constitutes infringement.¹² The remedies available to the copyright holder encompass bringing a civil action for damages or an interdict, delivery up or destruction of the copies, disclosure of the identities of suppliers and clients, legal costs and interest.¹³ In many jurisdictions, copyright infringement is also a criminal offence in addition to being a civil wrong.¹⁴

In most jurisdictions copyright subsists automatically and free of charge upon the creation of work that meets the requirements for protection. The creator or author of a work does not need to register his or her copyright in the work or to assert his or her rights by any statement accompanying the work. However, in the United States copyright may be registered to

¹¹ Authority may be obtained contractually from the copyright holder or be derived from statutory exceptions. However, such statutory exceptions are generally for limited personal, academic or non-commercial use including maintenance and repair of computer programs. These exceptions are generally inapplicable to the ordinary business usage of e-commerce business methods by accommodation SMEs and are therefore not discussed in any detail in this thesis. See s 19 B (2) SA Copyright Act, ss 50A - 50C and 296A CDPA, s117 US Copyright Act.

¹² Dean *Copyright* 1-37: Protected works can be infringed in three ways, namely, direct or primary infringement, indirect or secondary infringement, and tertiary infringement created by other legislation such as South Africa's Counterfeit Goods Act. Primary infringement occurs when a person does any of the acts listed above without the consent of the copyright holder (see s27 CDPA, s 23(1) SA Copyright Act). Secondary infringement occurs when a person engages in unauthorised dealing in infringing copies or permits an infringing performance of a work to occur (see ss 23 – 24 CDPA, s 23(2) SA Copyright Act).

¹³ ss 96-97 CDPA, ss 502 – 505 US Copyright Act and s 24(1) SA Copyright Act. Also see Dean *Copyright* 1 - 72A.

¹⁴ For example s 27 of the SA Copyright Act criminalises copyright infringement.

create a public record of the existence of copyright.¹⁵ In most circumstances copyright applies worldwide due to the reciprocal statutory extension of protection between member states of the Berne Convention for the Protection of Literary and Artistic Property of 1886 (Berne).¹⁶

The duration of copyright varies between the jurisdictions and depends on the type of work in issue. For example, in the United Kingdom copyright in literary works subsists for a period of 70 years from the end of the calendar year in which the author of the work dies.¹⁷ In South Africa the copyright term for literary works is the life of the author plus 50 years.¹⁸

¹⁵ United States Copyright Office 'Copyright Basics' 7. Available at < <http://www.copyright.gov/circs/circ01.pdf> > (last accessed 13 April 2011).

¹⁶ 1161 UNTS 3.

¹⁷ s 12(2) CDPA. Section 12(3) CDPA provides that if the author of the work is unknown the copyright 'will expire at the end of the period of 70 years from the end of the calendar year in which the work was made, or if during that period the work is made available to the public, at the end of the period of 70 years from the end of the calendar year in which it is first so made available'.

¹⁸ s 3(2) (a). Section 3 (3) (a) provides that if the work is anonymous or pseudonymous, the term of copyright will be 50 years from first authorised publication or 'from the end of the year in which it is reasonable to presume the author died, whichever term is shorter'.

Providing a full history of international or local (South African) copyright is beyond the scope of this work,¹⁹ but the brief definition of copyright given above is essential to place the discussion in context.

4.1.1 Copyright requirements

Whilst each of the three jurisdictions discussed in this chapter has its own domestic copyright legislation,²⁰ the core requirements for copyright protection are the same. The difference between jurisdictions lies in the interpretation and application of these requirements, particularly with regard to the determination of what constitutes protectable expression as compared to unprotectable ideas and their approach to non-literal copying (discussed at section 4.3 below).

Essentially, copyright subsists in original²¹ eligible work that is reduced to a material form²² and is created by a qualified person²³ or eligible work

¹⁹ For an overview of international history see Alexander A Caviedes 'International copyright law: should the European Union dictate its development?' 1998 *Boston University International Law Journal* 165 (hereafter Caviedes 'International copyright law'), for local history see Smith *Copyright companion* 1 - 2A - 1 - 4.

²⁰ The US Federal statute is the US Copyright Act. In addition to federal legislation, there was a parallel development of state copyright law, referred to as 'common law'. There is also other earlier legislation enacted before the effective date of the 1976 Copyright Act which is still applicable to matters where the cause of action arose or occurred while that legislation was still in effect. These laws are not discussed in this chapter. Copyright law in the United Kingdom is provided for by the CDPA. Copyright Law in South Africa is provided for by the SA Copyright Act.

²¹ s 102(a) US Copyright Act, s 1(1) CDPA and s 2(1) SA Copyright Act.

²² s 102(a) US Copyright Act, s 3(2) CPDA and ss 2(2) - 2(2A) SA Copyright Act.

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that is first published in that jurisdiction or another country to which protection is extended.²⁴ The first three requirements are briefly outlined below. The fourth requirement pertaining to the qualification of the author does not warrant detailed discussion as it does not raise any substantive issues.

(a) Eligible works

Each jurisdiction’s legislation provides a list of works that are eligible for copyright protection.²⁵ These are listed by jurisdiction in the table below.

Jurisdiction	United States	United Kingdom	South Africa
Eligible works	<p>Non –exhaustive list:</p> <p>(1) literary works; (2) musical works, including any accompanying words; (3) dramatic works, including any accompanying music; (4) pantomimes and choreographic works; (5) pictorial, graphic, and sculptural works; (6) motion pictures and other audiovisual works; (7) sound recordings; and (8) architectural works.</p>	<p>Exhaustive list:</p> <p>(1) literary, dramatic musical or artistic works; (2) sound recordings; films or broadcasts; and (3) the typographical arrangement of published editions</p>	<p>Exhaustive list:</p> <p>(1) literary, musical and artistic works; (2) cinematograph films; (3) sound recordings; (4) broadcasts; (5) programme-carrying signals; (6) published editions and (7) computer programs</p>

Table 5: works eligible for copyright protection

²³ ss 3(1) and 37 SA Copyright Act and the regulations under s 37, s206 CDPA. A qualified person is a person who is a citizen or resident of the relevant jurisdiction or another country to which protection is extended such as a fellow Berne Convention country.

²⁴ For example ss 4(1) and 1(5) SA Copyright Act, extend copyright extension to works first published in a Berne member state.

²⁵ s102(a) US Copyright Act, s 2(1) SA Copyright Act and s1(1) CDPA.

The South African Copyright Act provides for computer programs as a separate category of eligible works.²⁶ The United States and United Kingdom's copyright legislation subsumes computer programs into the literary works category²⁷ as does TRIPS²⁸ and, by implication, Berne.²⁹ On the face of it, it appears as if substantively nothing turns on this distinction as computer programs are protected by copyright and the economic and moral rights given to the copyright holder in computer program in all three jurisdictions are the same.³⁰ However, the South African approach (of categorising computer programs as a separate category of eligible works) raises some concerns about the country's

²⁶ S 2(1) (i) SA Copyright Act.

²⁷ Dean *Copyright* 1-7 defines literary works as 'written works' and are 'any combination of letters and/or numerals which embody the results of a measure of intellectual effort or skill. s 102(a)(1) US Copyright Act defines literary works as 'works, other than audiovisual works, expressed in words, numbers or other verbal or numerical indicia, regardless of the nature of material objects, such as books, periodicals, manuscripts, phonorecords, tapes, film, discs, or cards, in which they are embodied'. s3 (1) CDPA defines literary works as 'any work, other than a dramatic or musical work, which is written, spoken or sung, and accordingly includes—(a) a table or compilation other than a database, (b) a computer program,(c) preparatory design material for a computer program and(d) a database'.

²⁸ Art 10(1) TRIPS provides: 'Computer programs, whether in source or object code, shall be protected as literary works under the Berne Convention (1971)'.

²⁹ Berne does not specifically provide for the protection of computer programs as literary works but it is widely accepted that computer programs does in fact find protection as such under Berne. See Dreier and Hugenholtz *Concise European copyright law* 12.

³⁰ These are the exclusive rights to (among others) reproduction, performance, adaptation and distribution. For a full list see s106 US Copyright Act, s 16 CDPA and s 11B South African Copyright Act.

legislation's TRIPS compliance.³¹ Further, it also creates complexity with regard to authorship and ownership of copyright in collaboratively created software and preparatory or ancillary material because different rules apply to each type of work.³² Finally, it creates uncertainties about South Africa's approach to non-literal copying as discussed below at section 4.3.3.

In all three jurisdictions, preparatory and ancillary material (such as design and program documentation) will be protected as literary, artistic or audiovisual works depending on the nature of the material.

(b) Originality

The originality requirement is interpreted in substantially the same way in the United States, United Kingdom and South Africa. Its essence is that it requires 'independent creation and not novelty' from the creator of a work.³³ Courts in all three jurisdictions have held that a low level of creativity and some exertion is required from the author. For example a United States court has stated that 'originality merely requires

³¹ A discussion of this aspect is beyond the scope of this work. For such discussion see Lee-Ann Tong 'Copyright Protection for Computer Programs in South Africa: Aspects of Sui Generis Categorization' (2009) 12 *Journal of World Intellectual Property* 266 at 270 - 271.

³² A full discussion of this angle is beyond the ambit of this work. For such discussion see Tong (2009) at 278 -279. *Nimmer on copyright* para 2.01[A] 2-7 and the authorities cited therein. Further discussed at para 2.01[A] 2-8 – para 2.01B 2-18.

independent creation by the author and just a scintilla of creativity'.³⁴ In the United Kingdom a work will be considered original when enough 'skill, judgment and labour' or 'selection, judgment and experience' or 'labour, skill and capital'³⁵ are expended in its independent creation. In South Africa a work is considered original if, in addition to independent creation, 'sufficient skill and effort' have been expended in creating it.³⁶

(c) Reduction to material form & the idea/expression dichotomy

As already stated each of the three jurisdictions under discussion requires that work be reduced to material form or writing in order to be eligible for copyright protection.³⁷ Copyright protection is thus afforded

³⁴ *Luck's Music Library, Inc v Ashcroft* 321 F Supp 2d 107, 118 (DDC 2004) aff'd sub nom. *Luck's Music Library, Inc v Gonzales* 407 F 3d 1262 (DC Cir 2005), as quoted by *Nimmer on Copyright* para 2.01B 2-15.

³⁵ Cornish et al *Intellectual Property* 441 para 11-04. See also David I Bainbridge 'The scope of protection for computer programs' 1991 *Modern Law Review* 643 at 644.

³⁶ Smith *Copyright Companion* 9, Dean *Copyright* 1-15 - 1-17, citing, among others, *Haupt t/a Softcopy v Brewers Marketing Intelligence (Pty) Ltd and others* 2006 (4) SA 458 (SCA) at 472 - 474 . Also see *Accesso CC v Allforms (Pty) Ltd and another* [1998] JOL 3924 (T) at 32.

³⁷ s 102(a) US Copyright Act, s 3(2) CPDA and ss 2(2) – 2(2A) SA Copyright Act.

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only to expressions and not to ideas³⁸ as provided for in the TRIPS Agreement³⁹ and the WIPO Copyright Treaty (WCT).⁴⁰ Ideas are not protected because to do so would stifle further creativity by removing ‘the building blocks’ of innovation from the public domain.⁴¹ The application of this idea/expression dichotomy⁴² rule is generally problematic as the boundaries between idea and expression are often difficult to establish.⁴³ For example, the determination of these boundaries in relation to

³⁸ Section 102(b) of the US Copyright Act expressly provides that: ‘In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work’. The United Kingdom is also bound by the Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs OJ L 111, 5.5.2009, p 16 which provides in art. 1 (2): ‘Protection in accordance with this Directive shall apply to the expression in any form of a computer program. Ideas and principles which underlie any element of a computer program, including those which underlie its interfaces, are not protected by copyright under this Directive’. See also *Nimmer on Copyright* para 2-203, Cornish et al *Intellectual Property* at 441 para 11-04, Bainbridge *Intellectual Property* at 48- 49 Thomas Dreier and Bernt P Hugenholtz (eds) *Concise European copyright law* (2006) 198 (hereafter Dreier and Hugenholtz *Concise European copyright law*), Dean *Copyright* 1-18. TRIPS art 9(2) provides ‘copyright protection shall extend to expressions and not to ideas, procedures, *methods of operation* or mathematical concepts *as such*’. (My emphasis)

⁴⁰ WIPO Copyright Treaty 36 ILM 65 (WCT) art 2 provides that ‘copyright protection extends to expressions and not to ideas, procedures, methods of operation or mathematical concepts as such.’

⁴¹ Jay Rubin ‘Television formats: caught in the abyss of the idea/expression dichotomy’ (2006)16 *Fordham Intellectual Property, Media & Entertainment Law Journal* 663 at 675: ‘The principle of the idea/expression dichotomy assures that an author cannot take ideas out of circulation just because she employs them, especially when those ideas are the building blocks upon which scientific research may be advanced’.

⁴² This a basic tenet of copyright law which holds that copyright protection is only granted to the expression or embodiment of an idea and not to the abstract idea, its functionality or its application. See Thomas Dreier and Bernt P Hugenholtz (eds) *Concise European copyright law* (2006) 198 (hereafter Dreier and Hugenholtz *Concise European copyrightlaw*), Dean *Copyright* 1-18

⁴³ Bainbridge *Intellectual Property* 49.

television formats is fiercely contested.⁴⁴ In that context, courts rely on various tests and policy levers to make the distinction.

Similarly, in the context of the copyright protection of computer programs, courts have devised tests to ensure that ideas or functionalities are separated from expression so that the protection of expression does not encompass underlying ideas. These tests are outlined below at section 4.3. Distinguishing expression from idea is extremely difficult in the context of software due to its hybrid nature which incorporates both ideas/functionalities together with 'expressive elements'.⁴⁵

As explained by Karjala software 'has intrinsic utilitarian functions to cause a particular type of computing machine to function in a desired way that go beyond simply conveying information or portraying their own

⁴⁴ See for example Rubin, U Klement 'Protecting television show formats under law: new developments in common law and civil law countries' (2007) 29 *European Intellectual Property Review* 52, David Rose 'Format rights: a never-ending drama (or not)' (1999) 10 *Entertainment Law Review* 170, Frank L Fine 'A case for the federal protection of television formats: testing the limit of expression' (1985-1986) 17 *Pac LJ* 49.

⁴⁵ Richard Armstrong Beutel 'Software engineering practice and the idea/expression dichotomy: can structured design methodologies define the scope of software copyright?' (1991-1992) 32 *Jurimetrics Journal* 1 at 2. See also Dogan and Liu 207, Matt Flinders 'Protecting computer software—analysis and proposed alternative' (2007) 7 *Journal of High Technology and Law* 71 at 77.

appearance'.⁴⁶ Further in many cases, the idea and expression often merge because 'the underlying idea (or system, process, or method of operation) can effectively be expressed only in one way'.⁴⁷

In such cases, under the merger doctrine,⁴⁸ or a similar judicial tool, the expression is not afforded copyright protection because to do so would be to also protect the idea, system or method.⁴⁹ The scenes a faire doctrine is also used to limit copyright protection. Under this doctrine copyright protection is not extended to expressions that are 'so rudimentary, commonplace, standard or unavoidable that they do not serve to distinguish one work within a class of works from another.'⁵⁰

⁴⁶ Dennis S Karjala (2010) 'Protecting Innovation in Computer Software, Biotechnology, and Nanotechnology' 12 note 30 (unpublished paper, draft dated 2 September 2010) available at < http://works.bepress.com/dennis_karjala/6> (last accessed 19 February 2011) (hereafter Karjala 'protecting innovation in computer software'). Also see Pamela Samuelson et al 'A manifesto concerning the legal protection of computer programs' (1994) 94 *Columbia Law Review* 2308 at 2316 (hereafter Samuelson et al 'Manifesto').

⁴⁷ Lipton 213 quoting Marshall Leaffer *Understanding Copyright Law* § 2.14[B][4] 4 ed (2005). See also Bainbridge *Intellectual Property* 49 and 260 – 261, Pamela Samuelson 'Why Copyright Law excludes systems and processes from the scope of its protection' (2006-2007) 85 *Texas Law Review* 1921 at 1943.

⁴⁸ Dan L Burk 'Method and madness in copyright' (2007) *Utah Law Review* 588 at 589, Matthew J Faust 'What do we do with a doctrine like merger? A look at the imminent collision of the DMCA and idea/expression dichotomy' (2008) 12 *Marquette Intellectual Property Law Review* 132 at 142 (hereafter Faust 'merger'), R de Villiers 334.

⁴⁹ For an example of the South African approach see *Sure Travel Ltd v Excel Travel (Pty) Ltd and others* 2004 BIP 275 (W) at para 46 where the court said 'it is the mode of expression that is protected in a literary work, not any functional features'.

⁵⁰ Faust 'merger' 143. Also see Lipton 214 and R de Villiers 334.

The following section provides a detailed outline of how copyright protects e-commerce business methods.

4.2 Copyright protection of e-commerce business methods

Due to the idea/expression dichotomy, the functionality of an e-commerce business method or computer program cannot be protected by copyright⁵¹ and is protected by other types of intellectual property. Where the requirements for protection are met, copyright protects the following elements of an e-commerce business method:

1. The source and object code are protected as literary works in the United Kingdom and the United States and as a separate category of works in South Africa.
2. Preparatory and ancillary documentation such as illustrations, design or program documentation in the form of flowcharts and program manuals⁵² are protected as literary or artistic works⁵³ in all three jurisdictions.

⁵² R de Villiers 319, Tong (2009) 271 – 272, Lipton 218 – 219, Simon Stokes *Digital Copyright: Law and Practice* 3 ed (2009) 103 (hereafter Stokes *Digital Copyright*).

3. The input material such as the accommodation SME's electronic database⁵⁴ of room availability or customer information is protected as literary works⁵⁵ or compilations.⁵⁶ There are also other forms of database protection (such as the database right⁵⁷) which are not discussed in Part A of this chapter, which focuses only on copyright protection of source and object code.
4. The output material such as the UI or the presentation of the method on a computer is protected by copyright in two ways. First as literary, artistic or audiovisual works in its own right depending

⁵³ Dean *Copyright* 1-9 defines artistic works as 'visual representations of ideas or of the results of intellectual effort, in material form.' See also s 4(1) – (2) CDPA, s 1(1) SA Copyright Act. Artistic works fall in the category of pictorial and graphical' works in the United States. See s 101 US Copyright Act : "Pictorial, graphic, and sculptural works" include two-dimensional and three dimensional works of fine, graphic, and applied art, photographs, prints and art reproductions, maps, globes, charts, diagrams, models, and technical drawings, including architectural plans...'

⁵⁴ 'Electronic databases are simply organised collections of data or information in electronic or digital form from where such data or information may be accessed, reproduced or retracted' per Tana Pistorius 'The protection of electronic databases' (2000) 12 *SA Merc LJ* 184 at 184.

⁵⁵ By definition databases are literary works in South Africa per s 1 which provides "literary work" includes, irrespective of literary quality and in whatever mode or form expressed ... tables and compilations, including tables and compilations of data stored or embodied in a computer or a medium used in conjunction with a computer'. The same situation prevails in the UK per s 3(1) CDPA.

⁵⁶ See ss 101 and 103 US Copyright Act, US Copyright Office (1997) 'Report on legal protection of databases' available at <<http://www.copyright.gov/reports/dbase.html>> (last accessed 17 February 2011)..

⁵⁷ See for example Bainbridge *Intellectual Property* 282 – 287, Cornish et al *Intellectual Property* 874 para 20-37 - 879 para 20-43, Stephen M Maurer, P Bernt Hugenholtz, Harlan J Onsrud 'Europe's database experiment' (2001) *Science* 789, Jane C Ginsburg 'Copyright, common law, and sui generis protection of databases in the United States and abroad' (1997-1998) 66 *U Cin L Rev* 151 (hereafter Ginsburg 'protection of databases').

on its nature.⁵⁸ Secondly, those elements that are not protected in the first way may be protected as non-literal aspects of the program.⁵⁹ UIs may also be protected by registered designs or trademarks in the United Kingdom and other European jurisdictions.⁶⁰ In addition UIs may be protected, under the law of unlawful competition, through a passing off action.

As already stated in Chapter One, this thesis focuses on the IP protection of computer programs for e-commerce business methods only. Therefore the copyright protection of elements 2 – 4 as listed above will not be discussed, with the exception of the discussion of passing off protection of UIs in Part B below (at section 4.9.1).

4.2.1 Can expression be stretched to encompass functionality?

A key question to be answered at this juncture is whether an expression can be stretched so as to encompass the whole, or a significant portion, of an idea. It is important to begin this consideration with an acknowledgement of the fact that due to the hybrid nature of software, ideas are often embedded in the protected expression. However, these ideas are not eligible for copyright protection and courts attempt to excise them from the expression, as stated above.

⁵⁸ Cornish et al *Intellectual Property* 860 para 20-23 – 862 para 20-25, Lipton 22, R de Villiers 318 and 334.

⁵⁹ R de Villiers 334.

⁶⁰ Cornish et al *Intellectual Property* 861 para 20-23, Lipton 23, Stokes *Digital Copyright* 102.

This position is best underscored through the use of the following example:

Programmer X writes source code for a computer program for a hotel reservation method in programming language A for Fun Lodge, an accommodation SME in Johannesburg. The method's core functionality is its ability to combine two data-sets – a traveller's preferred date and accommodation preferences and Fun Lodge's inventory of available accommodation- and to find a match for the traveller. Another important element of the method's functionality is its ability to facilitate expedited bookings by repeat customers. Such customers' payment and billing details are captured on their first visit and once they log in to make a repeat booking they can make the booking with one click on the 'Qwikbook' icon located in the bottom right corner of the UI.⁶¹ Qwikbook is protected as a registered trademark and its positioning on the web site is protected by the copyright in the layout of the UI. Fun Lodge may also protect the UI through a passing off action.

⁶¹ This example is modelled on Amazon.com's patented 1-click functionality that allows repeat customers to make purchases from Amazon.com with one click. 'Qwikbook' is the name an express accommodation booking functionality in use at <www.sleeping-out.co.za>.

If another programmer, Y, writes a substantively equivalent source code in another programming language, without copying any of X's code. Y has not (literally) infringed X's copyright in the source code.⁶² This is because copyright protection of the source code is limited to the lines of code written by X. However, as will be shown at section 4.3 below, if Y copies the 'look and feel' of X's program, it may be possible to successfully make a case for non-literal copying against him. Difficulties in formulating and applying appropriate tests for non-literal copying mean that it is possible that copyright may be extended beyond expression, to cover function.⁶³ These difficulties are directly attributable to the hybrid nature of computer programs and the complexities attendant on attempts to separate expression from function. In some cases, these attempts are unsuccessful.⁶⁴

The next question that arises is whether or not the protection of expression ought to be extended to cover the underlying idea in this way. In my view, such an extension would be inappropriate primarily because copyright is ill-suited to protecting functionalities. The reasons why copyright is so ill-suited are discussed below at section 4.4.2 (b). The

⁶² Stokes *Digital Copyright* 116, *Nova Productions v Mazooma Games and others* [2007] EWCA Civ 219 (Court of Appeal) at para.s 50 - 52.

⁶³ Ballardini 4.

⁶⁴ Ballardini 9.

extension of copyright in this way ‘undermines the integrity of the intellectual property system as a whole’⁶⁵ because it violates existing boundaries of copyright law and encroaches into the scope of patent protection.

Recommendations for reform to prevent the extension of copyright to functional aspects of computer programs by restricting or removing the concept of non-literal copying are outlined in Chapter Six (at section 6.2.2 (iv)).

A second scenario to consider under this example exists: the production of a substantially similar or an exact UI by Y, even without literal copying of its source code. Y will not be found to have infringed X’s copyright in the source code although a finding of infringement will be made in relation to the UI.⁶⁶ The protection of the copyright in the UI, or the use of a passing off action to protect it, would not cover the idea of the underlying two core functionalities described above (see section 4.9.1

⁶⁵ Peter S Menell ‘An epitaph for traditional copyright protection of network features of computer software’ (1998) 43 *Antitrust Bulletin* 651 at 671 (hereafter Menell (1998)).

⁶⁶ This example is based on the facts in *Navitaire Inc v easyJet Airline CO, Bulletproof Technologies Inc* [2005] ECDR 17 discussed at section 4.3.1 below. In this case, the court dismissed the claim for non-textual copying of the source code (at para.s 74 and 130) but found that there was an infringement of the copyright in relation to the GUI screen displays because these were artistic works in which copyright subsisted because sufficient skill and labour had been expended in creating them (at paras 98 – 99).

below). This is because to treat this as infringement would be stretch protection of expression to encompass the underlying idea.

4.3 National Approaches to non-literal copying

This section outlines the approaches of the United States, United Kingdom and South Africa to the copyright protection of computer programs. Literal or verbatim copying of source and object code is not controversial and courts have easily dispensed with such matters. These matters are decided by a simple comparison of the claimant's code and the allegedly infringing code.⁶⁷ Therefore subsequent sections do not dwell on literal copying.

Non-literal copying is somewhat more problematic.⁶⁸ It involves emulating aspects of computer programs such as 'structure, sequence of operations, functions, interfaces and methodologies' without literal copying of code.⁶⁹ The determination of non-literal copying is difficult because it harks back to the problem of distinguishing expression from idea. As stated above, certain approaches to non-literal copying may in fact extend the reach of copyright protection to functional aspects of

⁶⁷ Bainbridge *Intellectual Property* 254.

⁶⁸ Diver 128.

⁶⁹ Bainbridge *Intellectual Property* 254.

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computer programs. Differing approaches from emerged from the United States and the United Kingdom, as outlined in the following sections.

4.3.1 The United States' position

Courts have held that copyright subsists only in the expression of business methods and not in the business methodology idea itself or its functionality.⁷⁰ Generally, in the United States there is 'very thin' copyright protection of software which does not readily extend to the structure, sequence and organisation of computer programs.⁷¹ Courts currently utilise a combination of the abstraction-filtration-comparison test to separate expression from idea.⁷² This test was first enunciated in *Computer Associates International v Altai Inc.*⁷³ and entails the following three stages:

1. Abstraction: identifying the constituent parts of the program, for example its purpose, structure, modules, source and object code.⁷⁴
2. Filtration: a determination of whether the identified constituents are expressions or ideas.⁷⁵ The expression or 'golden nugget'⁷⁶ is then protected by copyright.

⁷⁰ Richard H Stern 'Scope of protection problems with patents and copyrights on methods of doing business' (1999) 10 *Fordham Intellectual Property, Media and Entertainment Law* 108 (hereafter Stern 'scope').

⁷¹ Ballardini 13 and 24.

⁷² R de Villiers 334 – 335, Lipton 207.

⁷³ 982 F 2d 693 (2d Cir 1992).

⁷⁴ R de Villiers 334, Flinders 89.

⁷⁵ R de Villiers 334, Flinders 89.

⁷⁶ *Computer Associates International v Altai Inc* at 710.

It is at this stage that courts apply the merger and scenes a fair doctrine or factor in fair use, inter-operability and other similar policy levers to ensure to limit the expression is protected to appropriate levels.

3. Comparison: The constituent elements that have been characterised as protectable expression are then compared with the alleged infringing work so as to determine whether or not infringement has in fact occurred.⁷⁷

In some instances such an approach successfully excludes ideas from protection,⁷⁸ although there are some doubts about the efficacy of this approach.⁷⁹ This test has been criticised for being ‘grossly inefficient’ when applied to complex computer programs.⁸⁰ Further, it is contended that the test may very well fail to distinguish expression from idea, through failing to produce the golden nugget.⁸¹

It has been noted that the courts ‘remain fundamentally uncertain of how broadly to demarcate’ copyright protection for computer programs.⁸²

4.3.2 The United Kingdom’s position

⁷⁷ R de Villiers 334, Flinders 89.

⁷⁸ R de Villiers 335 note 140.

⁷⁹ Lipton 209.

⁸⁰ Diver 128.

⁸¹ Diver 128.

⁸² Ballardini 17.

Initially the United Kingdom adopted a version of the abstraction-filtration-comparison test⁸³ but this was replaced by a test that evaluates the skill, labour and judgment expended in creating the work.⁸⁴ This test for establishing whether copyright infringement has occurred has been enunciated as follows:⁸⁵

- (1) What are the work or works in which the plaintiff claims copyright?
- (2) Is each such work "original"?
- (3) Was there copying from that work?
- (4) If there was copying, has a substantial part of that work been reproduced?

Under this approach, functional elements such as 'the structure, sequence and organisation' of computer programs are protected as 'detailed concepts incorporated in the expression' of the computer program.⁸⁶ These aspects will be protected where it is proven that substantial skill and labour were expended in their development and unauthorised copying of these elements is characterised as non-literal or non-textual infringement of the copyright protected source code. However, to be protected, the skill and labour must relate to expression

⁸³ *John Richardson Computers Ltd v Flanders* [1993] FSR 497, Ballardini 19.

⁸⁴ R de Villiers 335, *IBCOS Computers Ltd v Barclays Mercantile Highland Finance Ltd* [1994] FSR 275 (ChD) at 290 and 302, *Cantor Fitzgerald International v Tradition (UK) Ltd* [2000] RPC 95 (ChD) 132 at 136.

⁸⁵ *IBCOS Computers Ltd v Barclays Mercantile Highland Finance Ltd* at 289.

⁸⁶ R de Villiers 335 - 336. Also see Stokes *Digital Copyright* 106.

and not idea. If the labour and skill relate to ideas, they are treated as irrelevant.

*Navitaire Inc v easyJet Airline CO, Bulletproof Technologies Inc*⁸⁷ is a case in point. It has been lauded as ‘the most detailed, if now not the highest, authority on the issue of non-textual copying of a computer program’ in the United Kingdom.⁸⁸ The court dismissed the claim for non-textual copying because it found that Navitaire was attempting to protect skill and labour expended in creating the ‘business logic’ of OpenRes, the flight booking e-commerce method in question. The court held that such skill and labour were ‘not relevant’ and to that to afford protection to business logic would be tantamount to stretching protection of expression so as to cover underlying ideas.⁸⁹ Navitaire was unable to make a case for literal copying because the allegedly infringing method, eRes, was developed without access to Navitaire’s OpenRes source code.⁹⁰ The legal position, following this decision seems to be that ‘where an [alleged]

⁸⁷ [2005] ECDR 17.

⁸⁸ Andrew Clay ‘Nova Productions Ltd v Mazooma Games Ltd - game over for Nova’ (2007) 18(5) *Entertainment Law Review* 187 at 187.

⁸⁹ At para.s 74 and 130.

⁹⁰ At paras 113.

infringer has not had access to the source code of the original program...

a finding of copyright infringement will be difficult if not impossible.⁹¹

The same approach was taken by the Court of Appeal in *Nova Productions v Mazooma Games and others*⁹² where it dismissed a claim for infringement of copyright in source code through non-textual copying.⁹³ Further confirmation of this approach was given in 2010 by *SAS Institute Inc v World Programming Ltd*.⁹⁴ In particular, the court confirmed that copyright in source code does not protect programming languages,⁹⁵ interfaces⁹⁶ and functionality.⁹⁷

⁹¹ Simon Stokes 'The development of UK software copyright law: from John Richardson Computers to Navitaire' (2005) 11(4) *Computer and Telecommunications Law Review* 129 at 133.

⁹² [2007] EWCA Civ 219 (Court of Appeal).

⁹³ At para.s 31 - 45.

⁹⁴ [2010] EWHC 1829 (Ch). The SAS Institute case also includes a referral of five questions to the Court of Justice of the European Union (ECJ) pertaining to the interpretation certain sections of the Software Directive and the Copyright Directive. See Andrew Hobson and Matthew Starmer 'Case report: copying software - key questions referred to the ECJ' (2011) 17(1) *Computer and Telecommunications Law Review* 13-17.

⁹⁵ at para 217.

⁹⁶ at para 226.

⁹⁷ at para 236.

4.3.3 Comparison of United States and United Kingdom approaches

Whilst American and English courts use different tests, it is important to note that the underlying principle is the same: copyright protection of computer programs is limited to expressive and not functional elements of the computer program. It has been argued that the English approach of using skill and labour expended as a test may result in some functional elements being protected.⁹⁸ However, the English courts only consider relevant skill and labour and discount efforts expended in creating ideas as irrelevant.⁹⁹ In this way, they exclude ideas from protection.

4.3.4 The South African position

The cases considered by South African courts to date relate to literal copying.¹⁰⁰ The courts are yet to consider infringement of copyright in computer programs through non-literal copying.¹⁰¹ Predictions of a possible South African approach to non-literal copying are particularly difficult to make because South Africa has taken the unique approach of treating computer programs as a sui generis category of copyright eligible works. It is thus possible that South African courts will decline to follow

⁹⁸ R de Villiers 336, Ballardini 25.

⁹⁹ *Navitaire v easyJet Airline CO, Bulletproof Technologies Inc para.s 74 and 130, SAS Institute v World Programming Ltd* para 244.

¹⁰⁰ *Haupt t/a Softcopy v Brewers Marketing Intelligence (Pty) Ltd and others, Technical Information Systems (Pty) Ltd v Marconi Communications (Pty) Ltd and Another* 2007 BIP 303 (W).

¹⁰¹ R de Villiers 336, Tong (2009) 285.

either the American or English approach as these are based on copyright protection of computer programs as literary works.

4.4 The computer program copyright debate

This section highlights the policy issues that have arisen with respect to the copyright protection of computer programs for e-commerce business methods. It canvasses the position of both creators and users of e-commerce business methods. Following the convention established in Chapter Three, this section does not present the arguments with specific reference to accommodation SMEs because they are generally applicable to any and all creators and users. However, where a certain aspect is of particular relevance to accommodation SMEs, it is highlighted at section 4.5.

Like section 3.3 above, this section is crafted on the basis of the equitable IP model's evaluation criterion set out at section 1.5 (d) above. In particular, it asks whether copyright protection of computer programs is compatible with creator's needs and practices by considering whether:-

- a. Copyright protection contributes to, or detracts from, the commons from which ideas and functionalities are drawn.
- b. Copyright is an appropriate reward and incentive for programmers.
- c. Copyright is compatible with the nature of computer programs and the standard programming process.

The ease and cost of acquisition is not considered, as it has already been stated that copyright subsists automatically and free of charge once certain requirements are met. The section also takes a user's perspective and asks if copyright protection of e-commerce business methods benefits the user by making e-commerce business methods both affordable and accessible by fostering innovation and competition amongst creators.

It is worth noting at the outset that there are two levels of debate here. First, whether computer programs should be afforded copyright protection at all. Second, accepting that computer programs are protected by copyright and that this is unlikely to change, the debate focuses on determining appropriate or equitable levels of protection. The main issue is how to calibrate such protection to keep true to the normative goals of copyright protection and equitably balance the position of both creators and users.

It is important, at the outset, to emphasise the significance of the dual architecture of computer programs (i.e. their existence in both source and object code). Some of the arguments made in the computer program copyright debate apply primarily to one form and not the other. Where this is the case, it will be indicated in the following sections.

4.4.1 Arguments in favour of copyright protection of source code

(a) Utilitarian theories

Utilitarian theories are advanced at the first level of the debate - that is in support of affording copyright protection to computer programs. It is asserted that computer programs ought to be protected by copyright like any other protectable work to reward their creators and serve as an incentive to further creativity in the software industry. This immediately raises two questions.

First, is copyright an appropriate reward for software programmers? Some scholars argue that it is an appropriate reward because it meets their needs.¹⁰² In particular, the fact that protection arises automatically and without cost is lauded as being of great benefit to programmers. This is because it frees them to focus on their work without requiring costly and often delayed procedures to secure protection. However, this may also be construed as a disadvantage as it may foist a programmer with protection that he does not want. In such cases, the programmer has to find some means of opting-out of this protection. Before the development and free distribution of licenses by GNU and other similar

¹⁰² Jane C Ginsburg 'Four reasons and a paradox: the manifest superiority of copyright over sui generis protection of computer software' (1994) 94 *Columbia Law Review* 2559 at 2562 (hereafter Ginsburg 'manifest superiority of copyright').

organisations,¹⁰³ programmers had to draft the licenses themselves or hire attorneys to do so at significant expense.

Other scholars argue that copyright protection is inappropriate because it is incompatible with contemporary programming methods¹⁰⁴ (see section 4.3.2 (a) below) and is ill-suited to the functional nature of computer programs (see section 4.3.2 (b) below).

Secondly, does copyright protection of code promote innovation in the software industry? Those in support of copyright protection argue that copyright protection of code has not harmed the software industry, which is thriving.¹⁰⁵ On the other hand, those opposed to copyright protection aver that it stifles innovation because of its incompatibility with contemporary programming practices.

Further, it is contended that computer programs should be protected by copyright because this contributes to the public good in two key ways. First, through the provision of useful methods that can be utilised profitably for the benefit of users and the public in general. Secondly, where the protected expression is published, this contributes to the public

¹⁰³ These licenses are discussed below at section 6.2.3 (a).

¹⁰⁴ Lipton 228.

¹⁰⁵ Ginsburg 'manifest superiority of copyright' 2560.

good through making information pertaining to these methods available which would spur further innovation.

However, similar to the position with regard to software patents, the value of such disclosures is disputed. The problem in the copyright context is that computer programs are distributed not as source code but as object code (i.e. binary form) which is not readily comprehensible to humans thereby excluding any meaningful disclosure. It is possible to convert the object code to source code through decompilation, but it is unlikely that an ordinary user with no computer programming expertise could decompile object code. Therefore users have no meaningful access to both the protected expression and related ideas or functionalities which may be distilled from this expression. This defeats the instrumental rationale for copyright.¹⁰⁶

(b) International obligations

It is clear that copyright protection must be provided for both source and object code because it is required by TRIPS art 10(2)¹⁰⁷ which provides:

‘Computer programs, whether in source or object code, shall be protected as literary works under the Berne Convention (1971).’

¹⁰⁶ Dogan and Liu 214.

¹⁰⁷ Ginsburg ‘manifest superiority of copyright’ 2562 - 2563

This seems to dispense with the first level of the debate as TRIPS member states are obliged to afford copyright protection to computer programs. However, member states have some policy space created by TRIPS art 9(2) which limits such protection to expression and not ideas. Using several policy levers,¹⁰⁸ TRIPS member states' courts have developed various approaches to distinguishing expression from ideas (as discussed above at section 4.1.1 (c) and below at section 4.3) and to equitably balance creators' and users' interests. The public interest concerns underlying these approaches are discussed in the following section which makes a case for the limitation of copyright protection for source code.

4.4.2 Arguments against copyright protection of source code

There are various arguments against copyright protection of computer programs at both levels of the debate. These arguments support the denial of copyright protection to computer programs in the first place and can also be used to support the provision of thin or limited copyright protection.

¹⁰⁸ Dogan and Liu 209 list the following policy levers: 'lower-level functionality, inter-operability and use'.

(a) Incompatibility with programming practices and the software industry

When it comes to writing code the focus is on source code because it is written first and thereafter compiled or converted into object code. A programmer's skill, labour and knowledge go into writing source code and compilation is considered to be an automated menial task.

Copyright protection is inappropriate because writing source code is a sequential process with each developer incorporating substantial portions of code written by others into his own code. This is because contemporary programming methods are based on modularisation and re-use of these modules to ensure efficiency and inter-operability.¹⁰⁹ These units or modules of code are intentionally written so that it is possible to use them in many different contexts with no modifications or minor modifications to ensure that different computer programs can work together. Asserting copyright in source code makes it more difficult, time-consuming and expensive for creators or programmers to write new programs. This is because they have to independently create or re-write substantial amounts of source code or pay licence fees to access and use existing

¹⁰⁹ Lipton 228.

code.¹¹⁰ Where new code has to be written this is inefficient, may hinder inter-operability and ease of use to the detriment of users. Hence, some developers choose not to enforce their copyright against others and instead use creative commons or similar licenses to enable others to use their code.

To avoid having to depend on the goodwill of programmers, it is more equitable to limit (by statute or through case law) copyright holder's rights by providing exceptions to promote efficiency in programming practices, to enable inter-operability and ease of use. In some jurisdictions courts have rightly laid much store on inter-operability.¹¹¹ Fuller details of such legislative proposals are presented in Chapter Six (at section 6.2.1 (a) (iv)).

¹¹⁰ In arguments relating to patents this phenomenon is known as 'patent thickets', see for example James E Bessen 'Patent thickets: strategic patenting of complex technologies' (Working paper, 2003) 2 Available at < <http://www.researchoninnovation.org/thicket.pdf> > (last accessed 18 March 2011), James F McDonough III 'The myth of the patent troll: an alternative view of the function of patent dealers in an idea economy' (2006) 56 *Emory Law Journal* 189 at 203 – 204.

¹¹¹ For example, *Lotus Dev. Corp v Borland International Inc* 49 F 3d 807 (1st Cir 1995) at 817- 818: "That the Lotus menu command hierachy is a "method of operation" becomes clear when one considers program compatibilty. Under Lotus's theory, if a user uses several different programs, he or she must learn to perform the same operation in a different way for each program used. For example, if the user wanted the computer to print material, then the user would have to learn not just one method of operating the computer such that it prints, but many different methods. *We find this absurd*' (My emphasis).

As noted at section 3.3.2 (c) above, due to its short shelf life and a rapidly changing innovative landscape, computer programs do not require lengthy protection. Therefore, the lengthy duration of copyright is inappropriate for computer programs.¹¹² Hence calls for shorter term *sui generis* protection of computer programs (see section 6.2.1 (a) below).

(b) Incompatibility with the inherently functional nature of computer programs

Copyright protects the expression of both object and source code. Although courts have devised multiple means to separate ideas or functionalities from expression, these means are not always successful. This is to the detriment of both creators and users of e-commerce business methods.

Copyright protection of computer programs is not a suitable and meaningful reward for creators because copyright is ill-suited to protecting functional works. Generally speaking, protection of functional works is better left to patent law,¹¹³ because patent protection permits 'objectively measurable' 'incremental improvement of functional works'.¹¹⁴

On the other hand, copyright protection is static and does not cater for

¹¹² Ballardini 9.

¹¹³ See Dennis S Karjala 'Distinguishing patent and copyright subject matter' 2003 *Connecticut Law Review* 440 (hereafter Karjala 'Distinguishing').

¹¹⁴ Karjala 'Distinguishing' 444.

such improvement as it deals with different subject matter.¹¹⁵ To reward a creator with protection that is incapable of protecting his or her further development of that work is inappropriate. However, as already stated in Chapter Three, patent protection is inappropriate for computer programs generally and e-commerce business methods in particular. Protecting the functionality of e-commerce business methods creates difficulties for users because it stifles innovation leading to fewer, and possibly more expensive, methods on the market.

4.5 Impact of the copyright protection of e-commerce business methods on accommodation SMEs

Copyright protection is generally seen to be advantageous to creators because of its ease of acquisition. As it subsists automatically if the statutory requirements are met, it seems to be a good fit for accommodation SMEs that may have limited resources, in comparison to patents which are costly to acquire. However, this advantage is overshadowed by the numerous ways in which copyright protection of e-commerce business methods disadvantages accommodation SMEs as both creators and users.

¹¹⁵ Karjala 'Distinguishing' 455.

For creators the main disadvantage of copyright protection is its incompatibility with contemporary programming practices. An additional harmful effect of this incompatibility is its chilling effect on further innovation. Further, as copyright is ill-suited to protecting functional works, it is an inappropriate reward. For users, these incompatibilities with creators' needs may mean that there are fewer available methods and that those available methods are costly and incompatible with each other and are consequently difficult to use.

The overview of jurisdictional approaches in section 4.3 above shows that whilst courts have done their best to achieve equitable outcomes, there remains a lack of clarity with regard to the protection of non-literal elements of computer programs. Therefore, it is necessary to consider any available potential balancing tools to achieve an equitable environment for accommodation SMEs. Such tools include the use of FOSS and remedies under competition law which are discussed in Chapter Six.

4.6: Summary: An equitable approach

From both a creator's and a user's perspective, it appears that the balance of equity lies with eschewing copyright protection. For creators the main disadvantage of copyright protection is its incompatibility with contemporary programming practices which rely on the re-use of code to

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promote efficiency and inter-operability. Further, copyright is ill-suited to protecting functional works. For users, copyright protection's negative impact on creators translates into more costly and incompatible products which are difficult to use.

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PART B

4.7 Trademarks

Like copyright law, Trademark Law has a dual economic instrumentalist purpose. First, it ‘seeks to balance incentives to create and access to ideas’ by granting trademark holders exclusive economic rights as a reward and incentive for further innovation. A trademark holder controls that mark through statutory or common law rights to exploit the mark for profit or to prevent others from doing the same. Secondly, Trademark Law protects consumers by seeking to prevent ‘confusion in the consumer market as to the source of a given product’ or service.¹¹⁶ In this way, trademark protection for creators, enables consumers or users to distinguish the products or services of one provider from another.

Trademark protection is an important layer of legal protection for e-commerce business methods. Successful business methods are often associated with trademarks and may even be part of valuable brands.¹¹⁷ An example is Amazon’s 1-click method, which is inextricably linked to the Amazon trademark.

¹¹⁶ Lauren Fisher Keller “Trade dress protection for computer user interface “look and feel”” (1994) 61 *University of Chicago Law Review* 1011 at 1018.

¹¹⁷ A brand is defined by Belinda Isaac in *Brand Protection Matters* (2000) 8 as comprising of ‘the actual product [or service], that is the name, logo and packaging of the goods and also the product shape...[and] encompass[ing] the imagery in advertising and promotional literature’.

In addition, the actual name of the method, '1-click', has been registered as a trademark.¹¹⁸ South Africa provides both statutory and common law trademark protection as described below.

4.8 Statutory trademark protection

A trademark is defined by s 2 of the Trademarks Act 194 of 1993 as:

'a mark used or proposed to be used by a person in relation to goods or services for the purpose of distinguishing the goods or services in relation to which the mark is used or proposed to be used from the same kind of goods or services connected in the course of trade with any other person'.

A 'mark' is in turn defined by the same section as:

'any sign capable of being represented graphically, including a device, name, signature, word, letter, numeral, shape, configuration, pattern, ornamentation, colour or container for goods or any combination of the aforementioned'.

Trademarks are registered in terms of the Trademarks Act. Such registration is granted for an initial period of 10 years and thereafter may be renewed indefinitely for further periods of 10 years at a time.¹¹⁹ A trade mark is registered in respect of particular goods or services in a specific class of the trade marks register. It is trite that registered trade marks are protected from infringement by the use of an identical or a similar mark on identical or similar goods or services in the jurisdiction of

¹¹⁸ 1-click trademark registration number 2264368.

¹¹⁹ s 37(1) - (2).

registration. These are the principles of speciality and territoriality, respectively.¹²⁰

The Trademarks Act provides remedies for the following four types of infringement: unauthorised business or trade use of an identical or similar mark in relation to

- (a) the same goods or services;¹²¹
- (b) similar goods or services where it is likely to lead to deception or confusion;¹²²
- (c) any goods or services, if the registered trademark is well known in South Africa and such use would be likely to dilute the registered trademark¹²³ and
- (d) unauthorised business or trade use of a well known foreign trademark.

The last category of infringement provides protection equivalent to that secured through a passing off action to foreign enterprises who have well known marks even where those marks are not registered in South Africa and the enterprise has not traded or operated in South Africa.¹²⁴

¹²⁰ Caroline B Ncube 'When are complementary goods similar? *Waterford Wedgwood plc v Assembled Investments (Proprietary) Ltd*' (2010) 1 *SALJ* 51 at 51, Roshana Kelbrick 'The new trade-mark infringement provisions: How have the courts interpreted them?' (2007) 19 *SA Merc LJ* 86 at 86.

¹²¹ s 34(1)(a).

¹²² s 34(1)(b).

¹²³ s 34(1)(c) provides that dilution is to 'take unfair advantage of, or be detrimental to, distinctive character or the repute of the registered trademark' and will occur even if there is no confusion or deception.

¹²⁴ s 35.

The remedies available to the trademark holder encompass bringing a civil action for damages or a reasonable royalty, a prohibitory interdict, removal of the infringing mark or destruction of the articles on which the infringing mark is used, legal costs and interest.¹²⁵ In addition, the holder of a registered trademark can also rely on common law remedies. However, statutory remedies are not available where the trademark is not registered.¹²⁶

As at 23 February 2011 a trademark registration fee of R590 was payable with every new application¹²⁷ and the renewal fee was R260.¹²⁸ These are affordable amounts even for very small SMEs. Trademark registration is thus within the reach of accommodation SMEs, particularly when they file their own registration applications. If they appoint attorneys to make the application on their behalf, the costs are in the region of R4 500.¹²⁹ However, whether the SME files the application itself or appoints

¹²⁵ s 34 (3).

¹²⁶ s 33.

¹²⁷ CIPRO 'How to apply' Available at <www.cipro.co.za/product_services/trade_howto.asp> (last accessed 23 February 2011).

CIPRO 'Renewal' Available at <www.cipro.co.za/product_services/trade_renewal.asp> (last accessed 23 February 2011).

Hahn & Hahn Inc 'South African trademarks' Available at <www.sapat.co.za/trademark-south-africa.htm> (last accessed 23 February 2011).

attorneys, the trademark registration process is plagued by delays.¹³⁰ To mitigate the effect of such delays, a SME may begin using its trademark pending registration. If infringement occurs during this interim period, common law protection may be available.

4.9 Common law trademark protection

Common law remedies are available in two instances. First, where a registered trademark has been infringed, in addition to the statutory remedies, the wronged party may also have recourse to common law remedies. Second, where the mark is not registered, the wronged party's only recourse will be under the common law.¹³¹ The relief provided by common law is provided by the law regulating unlawful competition.

The phrase 'unlawful competition' refers to business conduct that prejudices a competitor's lawful business conduct by obtaining some kind of illegal advantage over that competitor.¹³² There is a wide and potentially unlimited range of acts or activities that constitute unlawful competition.¹³³ However, there are well known and accepted categories of

¹³⁰ Kaplan 3 notes that trademark registrations usually take between two to three years.

¹³¹ s 33 Trademarks Act.

¹³² M von Siedel (ed) *Intellectual Property: The John And Kernick Guide* (1998) 61 (hereafter von Siedel *Intellectual Property*).
HJO van Heerden and J Neethling *Unlawful Competition* (1995) 4 (hereafter van Heerden and Neethling *Unlawful Competition*).

acts that constitute unlawful competition. Of these the most well known act is arguably ‘passing off’.¹³⁴

Passing off occurs when a person makes a misrepresentation that his goods or services are those of another, or are associated with those of another.¹³⁵ To bring a successful passing off action the wronged party must prove reputation and goodwill in South Africa and harm occasioned by the wrongdoer’s misrepresentation.¹³⁶ Misrepresentation may be made through express oral or written expressions, the use of identical or confusingly similar marks, or impressions created by advertising campaigns.¹³⁷ Of particular interest to this thesis is the protection passing-off can provide for UIs or the ‘look and feel’ of e-commerce business methods which is discussed below at section 4.9.1.

The remedies available to the wronged party are an interdict and damages. To obtain damages for unlawful competition the wronged party must prove an intentional or negligent wrongful or unlawful act that has

¹³⁴ J Neethling ‘The passing-off action: requirements and protected interests—a conceptual and critical analysis’ (2007) 124 *SALJ* 459 at 459 (hereafter Neethling ‘passing off action’).

¹³⁵ Neethling ‘passing off action’ 459 - 460.

¹³⁶ van Heerden and Neethling *Unlawful Competition* 169, Von Siedel *Intellectual Property* 62.

¹³⁷ Von Siedel *Intellectual property* 62. For example, In *Kwik Kopy (SA) (Pty) (Ltd) v Van Haarlem and another* [1998] 2 All SA 362 (W), the court held that a former franchisee who continued to trade under the franchise banner was competing unlawfully with the franchisor and ordered it to stop such passing-off.

caused (both factually and legally) patrimonial loss.¹³⁸ Where the relief sought is an interdict, it is not necessary to prove fault. The wronged party merely has to prove a wrongful act which has been committed or threatened and the lack of any other remedy.¹³⁹ Litigation is quite costly and often protracted. This will probably disadvantage accommodation SMEs that seek protect their e-commerce business methods in this manner as they are unlikely to have the financial resources to fund this type of litigation.

¹³⁸ Van Heerden and Neethling *Unlawful Competition* 65 - 74.

¹³⁹ Ibid 74 - 75.

4.9.1 Passing off protection of UIs

There is, as yet, no South African case law or scholarly publication on passing off in relation to websites. However, it seems to be possible to rely on passing off in this context. There have been several attempts to extend similar statutory protection to websites in the United States under s 43(a) of the Trademarks Act, 1946.¹⁴⁰ In the United Kingdom, a passing off action in relation to a website was successful in *Lifestyle Management Ltd. v Frater*.¹⁴¹ Therefore, it ought to be possible to successfully apply passing off protection to the look and feel of an e-commerce business method in South Africa. A creator of a UI would merely have to establish the requirements for a passing off action in relation to the look and feel of the relevant e-commerce business method.

The first step would be to characterise the UI/look and feel of the website as the get-up or trade dress¹⁴² of the e-commerce business method. Such

¹⁴⁰ See for example *Blue Nile, Inc. v. Ice.com, Inc.*, 478 F. Supp. 2d 1240 (W.D. Wash., 2007), *SG Serv., Inc. v. God's Girls, Inc.*, non-reported case, 2007 WL 2315437 (C.D. Cal. 2007), *Taylor Building Corp of America v Benfield* 507 F. Supp 2d 832 (S.D. Ohio 2007).

¹⁴¹ [2010] EWHC 3258 (TCC) (10 December 2010).

¹⁴² Xuan-thao N Nguyen 'Should it be free for all? The challenge of extending trade dress protection to the look and feel of websites in the evolving internet' (2000) 49 *American University Law Review* 1233 at 1236 provides the following definition: 'Trade dress is broadly defined as the total image and overall appearance of a product or service'. Also see Amber R Cohen 'A square peg into a round hole: trade dress protection of website, the perspective of the consumer and the dilemma for the courts' (2008) 3 *Southern New England Roundtable Symposium Law Journal* 137 at 154.

a get-up would be the sum of ‘colo[u]r, graphics, animations, designs, layout, text or combination thereof’ on the website.¹⁴³ The creator or owner of the e-commerce business method must then prove that this get-up ‘has become distinctive of his [method], in the sense that the public associate the name, get-up or mark with the [method] marketed by him (this is often referred to as the acquisition of *reputation*)’.¹⁴⁴ This would be quite difficult where the site in question is constantly updated because such modifications may make it difficult for both the creator and users of the site to ‘articulate or identify’ the site’s get-up.¹⁴⁵ However, if the get-up of an e-commerce business method is kept constant, this first requirement will be fulfilled.

The second stage of such a passing off action would be to prove that the defendant is employing the same or similar get-up that is causing confusion in the market place because consumers associate the two business methods with each other.¹⁴⁶ Once these two elements are established, the claimant will secure a prohibitory interdict and damages, as appropriate.

¹⁴³ Nguyen 1245.

¹⁴⁴ *Williams t/a Jenifer Williams & Associates v Life Line Southern Transvaal* 1996 (3) SA 408 (A) at 418E–H.

¹⁴⁵ Nguyen 1247.

¹⁴⁶ *Williams t/a Jenifer Williams & Associates v Life Line Southern Transvaal* at 418E–H.

It is important to consider the equity of such protection for e-commerce websites. It would clearly be in the interest of creators because it provides them with another means by which to protect their methods. It also benefits users through its consumer protection role. However, if this protection extends to functional aspects it will be detrimental to future creators and competitors of the business that establishes the get-up first. For this reason, in the United States trade dress protection is only extended to non-functional aspects.¹⁴⁷ This excision of functional aspects from the look and feel of websites has proven problematic in the United States, where courts are still devising appropriate tests.¹⁴⁸ To date, functionality has been determined with reference to whether or not that aspect of the get-up is 'essential to competition'.¹⁴⁹ If that aspect or feature is essential to competition it is considered functional and will not be protected.¹⁵⁰ It has been said that a feature will be essential where 'the benefits inherent in the particular design cannot be duplicated effectively through the use of other designs'.¹⁵¹

¹⁴⁷ Cohen 150 – 151, Nguyen 1274 – 1275.

¹⁴⁸ Formello 177 - 178.

¹⁴⁹ Matthew Formeller 'Trade dress protection for web sites: Is it time for the law to overtake theory' (2007-2008) 18 *DePaul J. Art Tech. & Intell. Prop. L.* 157 at 163 (hereafter Formeller)

¹⁵⁰ Lemley et al *Software & Internet Law* 44.

¹⁵¹ Kellner 1026.

If South African courts are to extend similar protection to websites, they will have to formulate clear and equitable tests to identify functional aspects. Further, it will be necessary to devise ways through which to ensure that such protection works appropriately in conjunction with copyright law, which also protects the look and feel of websites.

Courts in the United States have had some difficulty with distinguishing between aspects that ought to be protected by copyright law and those that ought to rely on trade dress protection.¹⁵² This difficulty has arisen because of the pre-emption provision in the US Copyright Act which requires differentiation between material protected by copyright and other types of IP protection.¹⁵³ The SA Copyright Act does not have an equivalent s pre-emption provision therefore; South African courts will not have to grapple with this issue to the same extent as American courts.

Therefore, in conclusion, it seems reasonable to assert that there is potential for meaningful protection of UIs by the law of passing off, however, it is essential for courts to devise appropriate tests to prevent

¹⁵² Anderson, J. Scott 'Painstaking semantics: selecting website trade dress elements to survive a copyright preemption challenges' (2007-2008) 7 *J. Marshall Rev. Intell. Prop. L.* [i].

¹⁵³ s301(a) US Copyright Act provides in part: 'all legal or equitable rights that are equivalent to any of the exclusive rights within the general scope of copyright as specified by section 106 in works of authorship that are fixed in a tangible medium of expression and come within the subject matter of copyright as specified by section 102 and 103 ... are governed exclusively by this title. [On and after January 1, 1978] no person is entitled to any such right or equivalent right in any such work under the common law or statutes of any State'.

the protection of functional aspects and to properly delineate the scope of such protection so as to avoid any conflict with copyright protection.

4.10 Conclusion

The three jurisdictions discussed in this chapter all enforce copyright in all aspects of e-commerce business methods although there are some differences in approach in relation to non-literal copying of computer programs. Further, South Africa has as yet not developed any jurisprudence on this issue. Hence the suggestion at section 6.2.1 (iv) below that an appropriate approach be partially codified to assist the courts when they are confronted by non-literal infringement claims in the future.

This chapter has shown that copyright protection of computer programs is not appropriate for accommodation SMEs as both creators and users. For creators the main shortcoming is copyright's incongruity with contemporary programming practices which rely on re-use of code. Further, as copyright is ill-suited to protecting functional works, it is an inappropriate reward for creators. An additional harmful effect of these two drawbacks is their chilling effect on further innovation. For users, these incompatibilities with creators' needs may result in fewer methods

being available. In addition, methods may be expensive due to low levels of supply. Finally, the compatibility and inter-operability of these methods is likely to be compromised.

On the other hand, trademark protection has been shown to be more appropriate for both creators and users. This is because in its sole application to the labels attached to e-commerce business methods; it avoids many of the problems inherent in copyright protection. For creators, it is valuable protection for an enterprise's brand that is associated with an e-commerce business method. It is also affordable and thus well within the reach of creators. Moreover, common law protection is available to those entrepreneurs who have not registered their trademarks, provided they have established common law trademarks. For users (including competing creators) trademark protection poses no significant risk because it does not extend to the functionality of a method. Therefore other creators are at liberty to incorporate the same functionalities into other methods resulting in a wider variety of methods being available to users. In addition, users benefit from the consumer protection nature of trademarks in that they are able to identify the source of methods they wish to acquire or use.

Intellectual property protection for e-commerce business methods in South Africa: Envisioning an equitable model for SMEs in the tourism industry

Finally, the law of passing off seems to offer an additional layer of protection for the look and feel of e-commerce websites. However, care needs to be taken with ensuring that functionalities are not protected in this manner.

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Chapter Five: Trade Secret Protection

This chapter advances the view that trade secrets are a suitable form of protection for the non-functional aspects of e-commerce business methods such as a business' customer or inventory databases. However, it argues that functional aspects encapsulated in the source code¹ should not be protected by trade secrets.

The chapter proceeds in four parts. Part 1 (section 5.1) provides an overview of trade secret law in the jurisdictions under study. Part 2 (section 5.2) conceptualises e-commerce business methods as trade secrets. Part 3 (section 5.3) presents the debate as to whether trade secret protection ought to be extended to the functional aspects of e-commerce business methods. Part 4 (section 5.4) concludes the chapter by considering whether trade secret protection is equitable generally and particularly for accommodation SMEs.

Unlike the position with regard to patent and copyright protection of e-commerce business methods where there are clearly discernable differences in national approaches, an examination of case law shows that there is uniformity with regard to trade secret protection.

¹ Object code is not treated as a trade secret and is made available to purchasers and licensees, however it is generally incomprehensible to humans.

Therefore this chapter does not contain a separate section that outlines jurisdictional approaches. An overview of trade secret protection as it applies across all three jurisdictions is given at section 5.1 below.

5.1 Trade Secrets

This section defines trade secrets, sets out the requirements for such protection and outlines the right-holder's remedies. A trade secret is 'trade, business or industrial information belonging to a person (usually an entrepreneur) which has a particular economic value and which is not generally available to and therefore known by others'.²

Whilst the United States has a statutory scheme³ and a common law regime is in place in the United Kingdom⁴ and South Africa, the core requirements for protection are the same. There are three essential

² Heerden and Neethling *Unlawful Competition* 223 - 224. For similar definitions see s 1 para 4 Uniform Trade Secrets Act (UTSA) (amended 1985) 12 ULA 437 (1990), s39 *Restatement (Third) Unfair Competition* (1995).

³ There is no federal legislation and each state regulates trade secret protection through its own legislation. However, the UTSA has been adopted by more than 40 states. Those states that have not adopted the UTSA rely on the Third Restatement of Unfair Competition Law. The common law as stated in the Restatement is applicable to cases brought under the UTSA because the two statutes are intended to be compatible. To this extent, there is uniformity in the United States on trade secret protection.

⁴ Under the civil law trade secrets are protected by the law of confidence and any misappropriation may be remedied by a civil claim for breach of confidence. See Kevin Garnett et al (eds) *Copinger & Skone James on Copyright* 15 ed (2006) 20-05, *R v Department of Health, ex parte Source Informatics Ltd* [2001] FSR 74 at 82, Cornish et al *Intellectual Property* 329 - 330 para 8-01.

criteria for establishing whether or not information constitutes a trade secret:⁵

- a) the information must relate to and be capable of application in trade or industry,
- b) it must be secret or confidential, and
- c) it must be of economic or business value.

There is no registration of trade secrets. Establishing and maintaining a trade secret is totally within the control of the owner, who may set up as expensive (or inexpensive) appropriate modes of protection within his or her enterprise. In some cases this may be as simple as keeping documents under lock and key. Trade secret protection may be maintained indefinitely as long as the information is kept in confidence.

Protection from disclosure or misappropriation is typically secured by obtaining contractual undertakings⁶ from employees⁷ and third parties who have access to the information through non-disclosure agreements (NDAs) and restraint of competition clauses in employment contracts.

⁵ Heerden and Neethling *Unlawful competition* 225, *Alum-Phos (Pty) Ltd v Spatz* [1997] 1 All SA 616 (W) at 623-4, *Motion Transfer & Precision Roll Grinding CC v Carsten* [1998] 4 All SA 168 (N) at 175, *Townsend Productions (Pty) Ltd v Leech* 2001 (4) SA 33 (C) at 53 – 54, *Walter McNaughtan (Pty) Ltd v Schwartz and others* [2003] 1 All SA 770 (C) at 777.

⁶ In the United States principles relating to contractual non-disclosure undertakings are found in the *Restatement (Second) Torts* ss 766 - 77A (1979).

⁷ In the United States principles relating to confidentiality in employment and agency relationships are found in the *Restatement (Second) Agency* ss 387 - 398 (1958).

In addition, in the absence of such contractual undertakings, in certain circumstances such as within an employment relationship, an equitable duty arises to maintain confidentiality.⁸

Any misappropriation,⁹ unauthorised use and disclosure of trade secrets is unlawful.¹⁰ Where the alleged misappropriation occurred in breach of a contractual undertaking, a court has to rule on the validity and currency of the contract. Where the NDA has expired, trade secret protection will be lost, as happened in *Marketel International Inc v Priceline.com Inc*.¹¹ However, where restraint of competition clauses are in issue, the courts will only enforce reasonable and fair clauses.¹² This approach involves much more than simply ruling on the validity of a contract, as the court has to take certain public policy considerations into account. In South Africa, which has a

⁸ *Restatement (Third) Unfair Competition* (1995) s 40; Cornish et al *Intellectual Property* 348 para 8-26, *Faccenda Chicken Ltd v Fowler* [1987] Ch 11 at 135 - 137. In relationships other than those of employment, the test to establish whether or not an equitable duty of confidence exists was laid down as follows in *Coco v AN Clark (Engineers) Limited* [1968] FSR 415 at 419: 'First, the information itself ... must 'have the necessary quality of confidence about it.' Secondly, that information must have been imparted in circumstances importing an obligation of confidence. Thirdly, there must be an unauthorised use of that information to the detriment of the party communicating it'. This test has been repeatedly confirmed over the years, for example, in 2007 in *Cembrit Blunn Ltd, Dansk Eternit Holding A/S v Apex Roofing Services LLP, Roy Alexander Leader* [2007] EWHC 111 (Ch) at 242.

⁹ Examples of the means by which information is misappropriated include theft, bribery, espionage, breach of confidence and fraud.

¹⁰ UTSA s 1, *Restatement (Third) Unfair Competition* (1995) s 43.

¹¹ *Marketel International Inc v Priceline.com Inc* 36 Fed Appx 423.

¹² Cornish et al *Intellectual Property* 348 para 8-26, *IBCOS Computers Ltd v Barclays Mercantile Highland Finance Ltd* [1994] FSR 275 (ChD) at 285.

constitutionally protected right to work (discussed at section 1.5 (b) (ii) above), the courts also have to weigh in constitutional imperatives.¹³

Remedies available once misappropriation is proven include an interdict and damages.¹⁴ Damages awards may be quite substantial. For example, in *Sunbelt Rentals, Inc v Head & Engquist Equipment, LLC*,¹⁵ damages of \$16,200,000.00 plus interest were awarded for the misappropriation of business information trade secrets.¹⁶ In addition, in the United States criminal sanctions are provided for by

¹³ Pretorious 159.

¹⁴ For the elements of the claimants' case see United States: *Restatement (Third) Unfair Competition* (1995) s 39 – 40(b). United Kingdom: *Thomas Marshall (Exports) Ltd v Guinle* [1979] Ch 227 at 248 E – G, *Carflow Products (UK) Ltd v Linwood Securities (Birmingham) Ltd* [1996] FSR 424, *De Maudsley v Palumbo* [1996] EMLR 460 (Ch D), Jeremy Phillips 'Opportunity Knox' (1997) 1 *Intellectual Property Quarterly* 134 -136. South Africa: *Kwik Kopy (SA) (Pty) (Ltd) v Van Haarlem and another* [1998] 2 All SA 362 (W) at 377, *Cyberscene Ltd and others v I-Kiosk Internet and Information (Pty) Ltd and others* 2000 (3) SA 806 at 823, *Waste Products Utilisation (Pty) Ltd v Wilkes* 2003 (2) SA 515 (W) at 586 D - E, J Neethling 'Requirements for the protection of confidential trade information or trade secrets' (2003) 120 *SALJ* 474.

¹⁵ 620 SE 2d 222 (NC Ct App 2005), *review denied*, 360 NC 296 (2006). This matter was decided by the North Carolina Court of Appeals under the North Carolina Trade Secrets Protection Act (NCTSPA) and the North California Unfair and Deceptive Trade Practices Act (UDTPA).

¹⁶ 620 SE 2d 222 at 228: This information included 'special pricing information, customer information (identity, contacts and requirements of its rental customers), personnel and salary information, organizational structure, financial projections and forecasts, utilization rates, fleet mix by market, capital and branch budget information.'

legislation.¹⁷ In the United Kingdom, the common law offers only civil remedies because trade secrets do not constitute property under the Theft Act 1968.¹⁸

In conclusion, it is important to emphasise that, trade secret protection, unlike patents, does not hinder others from legitimately reverse engineering¹⁹ or independently creating the same or similar goods, products, services or technology.²⁰ The basic legal position having been outlined here, the following section conceptualises e-commerce business methods as trade secrets

¹⁷ Federal Economic Espionage Act of 1996 18 USCA ss 1831-39, National Stolen Property Act 18 USCA s 2314, the federal mail fraud statute 18 USCA s 1341, the federal wire fraud statute 18 USCA s 1343 and the Racketeer Influenced and Corrupt Organisations Act 18 USCA ss 1961 – 1968. There are also state statutes that criminalise misappropriation of trade secrets, such as s 439 of New York's Penal Law Consol Laws 1909 c.40. For example, a conviction was secured for inducing breach of confidence in *Applebee v Skiwanek* 140 NYS 450 (Magis Ct 1912). Arun Chandra 'Protecting business methods in the United States' (2002) 5(4) *Journal of World Intellectual Property* 549, Louis Altman and Malla Pollack *Callmann on Unfair Competition, Trademarks, and Monopolies* (2007) s14.43 (hereafter Altman and Pollack *Callmann on Unfair Competition*), Gerald J Mossinghoff et al 'The Economic Espionage Act: a new federal regime of trade secret protection' (1997) 79 *Journal of the Patent and Trademark Office Society* 191.

¹⁸ Law Commission UK 'Misuse of trade secrets' Available at <http://www.lawcom.gov.uk/misuse_trade.htm> (last accessed 1 March 2011). In 1997 the Law Commission published a Consultation Paper (Legislating the Criminal Code: Misuse of Trade Secrets (LCCP150)) that addressed the introduction of criminal sanctions for trade secret misappropriation. However the proposed legislation is still awaited. Cornish et al *Intellectual Property* at 367 para 8-56 note that a Community Directive may soon provide for criminal sanctions for misappropriation of trade secrets.

¹⁹ According to Shari Lawrence Pfleeger and Joanne M Atlee *Software Engineering: Theory and Practice* 4 ed (2009) 571: 'reverse engineering, like documentation, provides specification and design information about the software system from its source code'.

²⁰ Bender (1990) 915, Szepesi 190. Lemley et al *Software & Internet Law* 40, Iraj Daizadeh et al 'A general approach for determining when to patent, publish, or protect information as a trade secret' (2002) 20 *Nature Biotechnology* 1053 at 1053 (hereafter Daizadeh et al).

5.2 E-commerce business methods as trade secrets

Only those e-commerce business methods that meet the criteria set out above will be eligible for trade secret protection, namely use in trade, confidentiality and economic value. The first requirement is easily met by all methods in that they are, by definition, trade, business or industrial information that is used in trade or industry. The nature of the business information is irrelevant. It could be technical, business or marketing information, for example, a marketing or business plan,²¹ a technical process or computer software.²² Technical information or processes do not have to be new or inventive²³ therefore trade secret protection is available to sub-patentable information and processes.

The second requirement will be met only by those methods that are undisclosed to the general public and are maintained in secrecy. The question that arises here is whether an e-commerce business method can in fact be kept secret. This question is best answered by going systematically through a method's constituent elements as identified in Chapter One. These are:

²¹ Marketing and business plans were protected as trade secrets in *Cyberscene Ltd and others v I-Kiosk Internet and Information (Pty) Ltd and others* at para 18 -19.

²² Bainbridge *Intellectual Property* 342 relying on *IBCOS Computers Ltd v Barclays Mercantile Highland Ltd* [1994] FSR 275. Also see *Cantor Fitzgerald International v Tradition (UK) Ltd* [2000] RPC 95.

²³ Cornish et al *Intellectual Property* 336 para 8-10.

1. The source and object code: The source code of proprietary computer programs is confidential and is not distributed to purchasers or licensees.²⁴ It is maintained and protected as a trade secret.²⁵ The object code is made available but this disclosure does not vitiate the secrecy of the source code because object code is (generally) incomprehensible to humans.²⁶
2. Preparatory and ancillary documentation such as illustrations, design or program documentation in the form of flowcharts and program manuals: Some of this documentation such as design documents may be kept in secrecy. Other documents such as user manuals are provided to purchasers or licensees of the method to enable the use of the method.²⁷
3. The input material such as an accommodation SME's electronic database of room availability or customer information: This

²⁴ Bender (1990) 919.

²⁵ Source code has been protected as a trade secret in all three jurisdictions under study. For example:

- In the United States: for computer-assisted design software- *Vermont Microsystems Inc v Autodesk Inc* 88 F 3d 142 (1996), for software to enable corporate disclosure- *LinkCo, Inc v Fujitsu Ltd* 232 F Supp 2d 182 (2002), for prescription and billing software for use in the pharmaceutical industry- *Mid-Michigan Computer Systems, Inc v Marc Glassman, Inc* 416 F 3d 505 (2005).
- In the United Kingdom: for general accounting package for agricultural dealerships -*IBCOS Computers Ltd v Barclays Mercantile Highland Ltd*, for a bond-broking system - *Cantor Fitzgerald International v Tradition (UK) Ltd* [2000] RPC 95.
- In South Africa: for accounting and administrative system for doctors and dentists- *Northern Office Microcomputer (Pty) Ltd v Rosenstein* 1981(4) SA 123(C).

²⁶ *Silvaco Data Systems v. Intel Corp.* 184 Cal.App.4th 210 at 215: 'One does not, by executing machine-readable software, "use" the underlying source code, nor does one acquire the requisite knowledge of any trade secrets embodied in that code.'

²⁷ David Bender 'Trade secret protection of software' (1970)38 *George Washington Law Review* 909 at 929.

material may be kept secret.²⁸ Indeed, certain customer information must be kept confidential under privacy laws and in terms of an enterprise's undertakings to its customers.

4. The output material such as the UI or the presentation of the method on a computer: This is visible to the public and is not kept in secrecy.

Clearly, it is possible to keep the source code, some documentation and input data related to an e-commerce business method secret. There may in fact be a legal obligation to do so, particularly with regard to customer information. However, it is debatable whether source code ought to be kept secret. This harks back to the question of whether the functionality of e-commerce business methods should be protected, an issue canvassed in Chapters Three and Four with respect to patents and copyright respectively. This debate, in the trade secret context, is presented at section 5.3 below.

The third requirement is also easily met because the purpose of every business method is to add value to a business. If it achieves this aim, then the method is of economic value. In some instances a method may be the embodiment of a business's competitive edge and is worth millions. The decision in *Sunbelt Rentals, Inc v Head & Engquist*

²⁸ In South Africa, client lists and pricing structures were protected as trade secrets in *Aqua d'or Mineral Water (Pty) Ltd t/a Aqua d'or v Camara and another* [2006] 2 All SA 29 (C).

*Equipment, LLC*²⁹ illustrates this point. In that case a United States Court of Appeal held that the misappropriation of trade secrets resulted in an ‘astounding’ 130 per cent increase in the business of the wrongdoer, from \$30.8 million in 1999 to \$55.4 million in 2000.³⁰

5.2.1 Source code as trade secrets

This brief section canvasses two important issues that have been the subject of litigation. The first is consumer or licensee liability for the misappropriation of source code and the second is the interplay between trade secret protection and copyright. They are discussed in turn below.

(a) Consumer Liability

The United States *Silvaco Data Systems v. Intel Corp* decision³¹ held that consumer use of a computer program that was based on misappropriated source code did not impute any liability on the consumer. This is because consumers do not receive source code.³² When consumers use or run the object code which is made available to them, this does not constitute misappropriation of the trade secrets in the source code.³³ Whilst this is an American decision, it is highly likely that English and South African courts would reach the same

²⁹ 620 SE 2d 222 (NC Ct App 2005), *review denied*, 360 NC 296 (2006).

³⁰ At 228.

³¹ 184 Cal.App.4th 210.

³² At 220.

³³ At 220: ‘It is undisputed that the object code executed by Intel could not disclose the underlying source code or permit the exploitation of its features and design. It could not, in short, impart knowledge of the trade secret’

conclusion, faced with similar facts because the approach of the three jurisdictions to trade secret protection is the same.

(b) Interplay with copyright protection

The interplay between trade secret protection and the copyright protection of source code is also an important issue. The key question being: where you have copyright-interests in code pitted against trade secret-interests in the same code and the copyright holder is threatening unauthorised disclosure of the confidential code, which rights prevail? This question has been considered within an employment relationship by South African courts. It was held that an employee's ownership of copyright in source code is not a defence to a trade secret misappropriation claim.³⁴ An employee who has copyright in source code, which he developed for an employer and which is maintained as a trade secret by that employer, is not entitled to disclose it to others.

³⁴ *Northern Office Microcomputer (Pty) Ltd v Rosenstein* at 135 where Marais AJ said:

'In my view, the mere fact that copyright is vested in an employee in certain circumstances does not mean that, even if the subject of the copyright is confidential and a trade secret, the employee may divulge it to whom he pleases. I do not think that the adoption of this view emasculates or nullifies the employee's copyright. He will still have locus standi to protect his copyright against infringement by third parties. Indeed, he will even be able to protect it against infringement by his employer, to the extent that the employer's use of it goes beyond what was expressly, or impliedly, authorised by the contract of employment. It is true that he will be hampered in his exploitation of the copyright if he has to respect his employer's trade secret, but I do not think the Legislature intended otherwise. To make copyright protection available to an employee is one thing. To strip an employer of his common law right to have his trade secrets respected is another. And, of course, if the subject of the copyright is not a trade secret, the employee is free to exploit it'.

In the United States s 301 of the Copyright Act³⁵ pre-empts all state laws that offer equivalent protection therefore in order to enable trade secret protection to co-exist with copyright there must be an element of differentiation between the material protected by trade secrets and that protected by copyright.³⁶ It has been held that this essential element of differentiation is found in the fact that breach of confidentiality is required to sustain a trade secret misappropriation claim and therefore trade secret protection and copyright protection can co-exist.³⁷

5.3 The computer program trade secret debate

Proponents of trade secret protection for e-commerce business methods depict it as superior to patent protection because it can protect sub-patentable methods, is easier to obtain than patents and may be of considerably longer duration as it is not subject to statutory duration periods like patents.³⁸ Whilst all this is true, it does not consider the

³⁵ This section reads:
(a) ... all legal or equitable rights that are equivalent to any of the exclusive rights within the general scope of copyright as specified by section 106 in works of authorship that are fixed in a tangible medium of expression and come within the subject matter of copyright as specified by section 102 and 103 ... are governed exclusively by this title. [On and after January 1, 1978] no person is entitled to any such right or equivalent right in any such work under the common law or statutes of any State.

³⁶ Judith A Szepesi 'Maximizing protection for computer software' (1996) 12 *Santa Clara Computer and High-Technology Law Journal* 173 at 196 (hereafter Szepesi) citing *Data General Corp. v Grumman Systems Support Corp.* 795 F.Supp. 501 (D. Mass 1992) at 505 (hereafter Szepesi).

³⁷ Szepesi 196.

³⁸ Peter J Torien 'Protecting inventions as trade secrets: a better way when patents are inappropriate, unavailable' Findlaw Library, Available at <<http://library.findlaw.com/2000/May/1/130451.html>> (last accessed 28 February 2011) (hereafter Torien), Szepesi 174.

public interest and ask whether or not such trade secret protection is equitable.

This section highlights the public interest issues that have arisen with respect to the trade secret protection of computer programs and e-commerce business methods. It canvasses the position of both creators and users of computer programs and e-commerce business methods. Following the convention used in Chapters Three and Four, this section does not present the arguments with specific reference to accommodation SMEs because these arguments apply to any and all creators and users. However, issues that are of specific relevance to accommodation SMEs are highlighted.

Like sections 3.3 and 4.4 above, this section is crafted on the basis of the equitable IP model's evaluation criterion set out at section 1.5 (d) above. In particular, it asks whether trade secret protection of computer programs is compatible with creator's needs and practices by considering whether:-

1. It contributes to, or detracts from, the commons from which ideas and functionalities are drawn.
2. Is it an appropriate reward for creators.
3. It is compatible with the nature of computer programs and the standard programming process.
4. It is easy and affordable to acquire.

The section also takes a user's perspective and asks if trade secret protection of e-commerce business methods benefits the user by

making e-commerce business methods both affordable and accessible by fostering innovation and competition amongst creators.

5.3.1 Arguments in favour of trade secret protection

(a) Utilitarian theories

Unlike patents and copyright, the economic and normative rationale for trade secret protection is considered unclear and is contested.³⁹ The most commonly advanced rationales are economic analysis of law, philosophical⁴⁰ and populist⁴¹ justifications.⁴² Each of these theories has its opponents⁴³ and proponents; however, the economic justification appears to be the most persuasive.⁴⁴ It is argued that allowing some legal protection to trade secrets is more beneficial to society than leaving it to owners of information to carve out their own more costly protection.⁴⁵ Further, the provision of such protection is

³⁹ Michael Risch 'Why do we have trade secrets?' (2007) 11 *Marquette Intellectual Property Law Review* 1 (hereafter Risch), Robert G Bone 'A new look at trade secret law: doctrine in search of justification' (1998) 86(2) *California Law Review* 241 at 296 – 303 (hereafter Bone).

⁴⁰ Risch 30 -37 : In summary, the philosophical justifications comprise two main arguments, namely, 'labour value' and 'veil of ignorance' theories. The 'labour value' argument, borrowing from Lockean theory, asserts that trade secrets are worthy of protection because they are the result of labour and so should be owned by the person who created them. The 'veil of ignorance' argument is that when rule makers do not know what will happen in the future or where their interests will lie, they tend to make fair and reasonable rules. It is argued that trade secret protection is probably the outcome of a 'negotiation under the veil of ignorance'.

⁴¹ Risch 37 – 38: The populist justification is simply that in those jurisdictions where there is legislative protection of trade secrets, this is a clear indication that the majority of people there support trade secret protection as legislation is enacted democratically by the people's representatives in parliament.

⁴² Risch 'Trade secrets' 1.

⁴³ See generally Bone 260 - 294.

⁴⁴ Risch 27.

⁴⁵ William M Landes and Richard A Posner (2003) *The Economic Structure of Intellectual Property Law* 365 (hereafter Landes and Posner '*Economic Structure of IP Law*').

said to incentivise innovation because it rewards creators or owners of information. However, arguments about programming inefficiencies and the absence of disclosure are made in opposition to these assertions (see section 5.3.2 below).

(b) Compatibility with programmers' needs

It is often argued that trade secret protection is suitable for the fast-paced software industry because it has no attendant registration costs or delays. The state of the art in the software industry is constantly evolving and in a state of flux, making patenting disadvantageous because by the time the lengthy procedures for securing a patent are completed, that computer program may be obsolete or beyond its shelf-life.⁴⁶ Further, it is argued that if the anticipated revenue generation from the computer program is modest or even low, trade secret protection is an appropriate form of protection because its costs may be kept low.⁴⁷ The fact that trade secret protection can be acquired cheaply makes it appropriate for accommodation SMEs with limited resources. Another advantage of trade secret protection over copyright protection, from a creator's perspective, is its protection of functional aspects of computer programs.

⁴⁶ Szepesi 198.

⁴⁷ Szepesi 198 - 199.

The mass distribution of computer programs is considered by some as an impediment to trade secret protection.⁴⁸ However, under current industry practice source code is successfully maintained as a trade secret because it is not provided to licensees who obtain only the right to use computer programs.⁴⁹

However, it is important to acknowledge that from a creator's perspective, trade secret protection is 'fragile' because once lost it cannot be recaptured.⁵⁰ Further, the monopoly it affords creators is of limited value because it does not preclude reverse engineering and independent creation. Viewed in this light, trade secrets are less harmful than patents, which grant their holders a monopoly and prohibit unauthorised reverse engineering and stop independent creators of the same invention from securing their own patents due to lack of novelty. From a user and competing creator's perspective this limitation of trade secret protection is advantageous because it allows the production of competing products, albeit inefficiently.

(c) International obligations

Article 39(2) of the TRIPS Agreement makes the provision of trade secret protection mandatory for WTO member states. It provides:

⁴⁸ Jay Dratler Jr 'Trade secret law: an impediment to trade in computer software' (1985) *Santa Clara Computer and High-Technology Law Journal* 27 at 46 (hereafter Dratler), Diver 126.

⁴⁹ Dratler 47.

⁵⁰ Szepesi 193.

‘Natural and legal persons shall have the possibility of preventing information lawfully within their control from being disclosed to, acquired by, or used by others without their consent in a manner contrary to honest commercial practices so long as such information:

(a) is secret in the sense that it is not, as a body or in the precise configuration and assembly of its components, generally known among or readily accessible to persons within the circles that normally deal with the kind of information in question;

(b) has commercial value because it is secret; and

(c) has been subject to reasonable steps under the circumstances, by the person lawfully in control of the information, to keep it secret.’

Article 39(1) requires member states to protect such information (trade secrets) to ensure ‘effective protection against unfair competition as provided in article 10*bis* of the Paris Convention (1967)’.⁵¹ The form of protection given is left to the member states to determine;⁵² however, it must protect any unauthorised use of such information that is ‘contrary to honest commercial practices’.⁵³ Therefore, if the creator of an e-commerce business method has established certain trade secrets that pertain to that method, legal protection must be afforded to those trade secrets.

⁵¹ To which member states are still bound in terms of TRIPS art 2.2. Surinder Kaur Verma ‘Protection of trade secrets under the Trips Agreement, and developing countries’ (1998) 1(5) *Journal of World Intellectual Property* 723 at 728 (hereafter Verma ‘Trade secrets’) explains that TRIPS art 39(2) ‘extends’ and reinforces art 10*bis* of the Paris Convention which requires member states to give their nationals effective protection against unfair competition.

⁵² Verma ‘Trade secrets’ 723.

⁵³ TRIPS art 39.2. TRIPS art 39.2 footnote 10 explains that such practices include ‘breach of contract, breach of confidence and inducement to breach, and includes the acquisition of undisclosed information by third parties who knew, or were grossly negligent in failing to know, that such practices were involved in the acquisition’. Also see Jayashree Watal ‘The TRIPS agreement and developing countries: strong, weak or balanced protection?’ (1998) 1 (2) *Journal of World Intellectual Property* 302.

5.3.2 Arguments against trade secret protection

(a) Programming inefficiency

Trade secret protection of source code that underlies or drives e-commerce business methods exacts high costs and hinders innovation, because writing source code is a sequential process, with each author drawing on and incorporating thousands of lines of code into the new computer program being created. Further, as noted in Chapter Four contemporary programming practices such as modularisation are reliant on the re-use of code. When source code is maintained as a secret it becomes much more difficult, time-consuming and expensive for programmers to write computer programs. This is because programmers would have to independently create or legitimately reverse engineer substantial amounts of source code or have to pay licence fees to access and use existing code. Further, in the South African context, the possibility of legitimate reverse engineering or independent creation of similar or even better source code cannot simply be assumed because developing countries are blighted by a lack of resources.⁵⁴ Whilst established software firms in South Africa may in fact have the resources and expertise to engage in successful legitimate reverse engineering and independent creation, accommodation SMEs are unlikely to have such resources and expertise.

⁵⁴ Verma 'Trade secrets' 739.

(b) Absence of disclosure

Some commentators have argued that trade secret protection does not benefit society because although society may benefit from useful products, services or technology related to the protected trade secrets, unlike patents, there is no disclosure of technical information that may spur or inform innovation.⁵⁵ However, as already noted, trade secret protection does not preclude legitimate reverse engineering or independent creation of the same or similar goods, products, services or technology. However, as noted above the cost and effort expended in reverse engineering makes programming inefficient and almost impossible for smaller entities such as an accommodation SME in South Africa.

5.4 Conclusion: An equitable approach

From both a creator's and a user's perspective, it appears that the balance of equity lies with eschewing trade secret protection. For creators the main disadvantages of trade secret protection are its negative effect on programming efficiency and its fragility. For users and future creators trade secret protection's main detrimental effects are its preclusion of the publication of useful information and its incompatibility with programming practices which favour modularisation and other forms of openness or sharing. This hampers

⁵⁵ Cornish et al *Intellectual Property* 331 para 8-02.

creative efforts and may result fewer and consequently more expensive methods being available on the market.

Accordingly, it is proposed (at section 6.2.3 (a) below) that creators' adoption of, and reliance on free and open source software will be beneficial to all stakeholders. The use of business models that enable acknowledgement of creators and revenue generation make this a viable option for creators.

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Chapter Six: Conclusion: Equitable Protection in South Africa

This final chapter summarises the arguments made in preceding chapters (at section 6.1) and then sets out suggestions for how the current IP protection of e-commerce business methods could be altered or better implemented to create a more equitable environment for accommodation SMEs in South Africa (at section 6.2). Section 6.3 concludes the thesis.

6.1 Summative evaluation of equity

The provision of equitable IP protection for the core functionalities of e-commerce business methods will enable accommodation SMEs that use these methods to prosper, to the benefit of the tourism industry and the national economy. This is not an inconsequential argument because, as has been already shown in Chapter One, tourism makes a substantial contribution to South Africa's GDP.

E-commerce business methods are essentially a type of application software and their key components are computer programs which contain the functionality of the method. Their core functionalities are search, booking and payment functionalities presented on a webpage. The other constituent parts of these methods are:

1. Documentation such as illustrations, flowcharts and program manuals.
2. The input material such as an accommodation SME's electronic database of room availability or customer information and preferences.
3. The output material such as the results of processed input data, for example a list of suitable accommodation presented on the method's UI.

Whilst all of these components are protected by IP, the protection of computer programs is the most problematic because they encapsulate a method's core functionality. Users seek affordable access to these functionalities whilst creators seek (among other things) exclusivity to enable the extraction of remuneration. Moreover, computer programs pose a unique challenge for IP law because they simultaneously constitute expressive and functional aspects. This is a challenge for IP law which traditionally classifies creations as either expressive or functional and then protects them as such.

Chapters Three, Four and Five considered patent, copyright, trademark and trade secret protection for computer programs. A major aspect of this consideration involved an examination of whether or not these forms of protection equitably balance the needs of creators and users. The discussion of equity was set against the backdrop of the

equitable IP model and the criteria for determining disadvantage and equity set out in Chapter One.

To recap, the crux of the equitable IP model is that as a developing nation, with a constitutionally protected right to work and the national priority of promoting SMEs in the tourism industry, South Africa ought to give due promotion of accommodation SMEs as users' interests. However, creators' rights also ought to be enforced as this is legally required and is ultimately to the benefit of users in as far as it results in the availability of a large variety of high quality, affordable e-commerce business methods.

The criterion for determining equity was set out in a series of questions (at section 1.5 (d)) which probed:

1. whether legal certainty had been achieved with regard to the nature and scope of protection,
2. the protection's compatibility with creators' needs and the creative process, and
3. whether the protection enabled user access to affordable e-commerce business methods.

The first question was discussed at sections 3.2, 4.3 and 5.1 which gave an overview of national approaches to the IP protection of e-commerce business methods. Questions 2 and 3 were discussed at sections 3.3, 4.4 and 5.3 within the context of the debates that have arisen around the patent, copyright and trade secret protection of

computer programs. Trademark protection of e-commerce business methods is not contentious because it does not extend to functional aspects, unlike patents, copyright and trade secrets. The arguments pertaining to each of these questions are summarised below.

(a) Legal certainty

Patents

Globally, there are two main approaches to the patent protection of e-commerce business methods, namely a restrictive approach in use in Europe and particularly England and a more liberal approach in use in the United States. Legal uncertainties exist in relation to each of these approaches. The US Patents Act does not exclude computer programs from patentability and is therefore more liberal than the EPC and UK Patents Act. However, there are some inconsistencies in the approach of United States' court in their application of the liberal approach. As noted in Chapter Three, the Supreme Court has recently rejected the 'machine or transformation test' which had been applied as the sole test for patentability by lower courts over a number of years. The Supreme Court has created uncertainty because it held that this test is not the sole test but did not venture to provide alternative tests or guidance on how to craft such tests.

The application of the restrictive approach is not uniform. The EPC and the UK Patents Act exclude computer programs 'as such' from

patentability but this exclusion is interpreted and applied differently, by the EPO and its Boards of Appeal versus the approach of UKIPO and the English courts. The European ‘any hardware’ approach is considerably more lax than the United Kingdom’s ‘technical effects’ approach.

South African legislation uses wording that is similar to the EPC and UK Patents Act South Africa but there is as yet no case law on the limited statutory computer program and business method exception. As the approach under the EPC is different from that under the UK Patents it is unclear which approach South Africa will follow.

South Africa has a registration patent office which enables creators to simply register patents which may not pass judicial muster. This is detrimental to future creators because functionalities which would not be afforded patent protection for being sub-patentable may in fact be registered as there is no substantive examination process. The option of litigating to invalidate such patents exists, as does that of simply infringing these patents in the hope of successfully counter-claiming for invalidation in the event of infringement litigation. However, the prevailing legal uncertainty highlighted above makes either course of action very risky especially in view of high litigation costs. This means that many future creators, especially smaller

entities such accommodation SMEs, would be wary of taking such a risk. Consequently, innovation is hampered. This effect is amplified where there are numerous patents protecting core functionalities creating patent thickets.

Copyright

When it comes to copyright protection, some legal uncertainty persists with regard to non-literal copying. The United States and the United Kingdom use differing approaches and the issue is yet to receive judicial scrutiny in South Africa. It is not possible to predict the likely outcome of such judicial consideration as South Africa has a unique approach to the copyright protection of computer programs. South African copyright legislation treats computer programs as a *sui generis* category of copyright eligible works whilst the United States and the United Kingdom treat them as literary works. South Africa's unique categorisation is indicative of an intention to treat computer programs differently from literary works. Therefore it is possible that South African courts will decline to follow either United States or United Kingdom precedents on the copyright protection of computer programs due to this difference in categorisation approaches. Therefore creators in South Africa are unlikely to risk engaging in non-literal copying because it is not clear which rules the court will apply to it.

Trade secrets

Legal certainty has been achieved with regard to trade secret protection with a similar approach being applied in the United States, England and South Africa.

(b) Compatibility with creators' needs and the creative process

From a creators' perspective, the key concerns are whether IP protection enables creators to contribute to or maintain a vibrant idea/functionality commons, serves as a meaningful reward or incentive for innovation, is compatible with the creative process, and the ease and affordability with which such protection can be acquired. Each of these needs is discussed in turn below.

(i) Impact on the idea/functionality commons

The disclosure provided by patents is of limited value because the abstract nature of computer programs leads to very broadly and vaguely drafted patent specifications which secure very wide protection to the first creator to the detriment of future creators. Further, this disclosure omits the potentially most useful aspect, the source code of the computer program in issue. Trade secrets offer no disclosure at all and therefore make no contribution at all to the idea/functionality commons because both functionality and expression are kept confidential. Similarly, the copyright protection of computer programs precludes disclosure of both functionality and expression as it is standard software industry practice to withhold the

source code. The object code is made available but it is not readily decipherable to humans. Disassembly or decompilation may reveal the source code but this has attendant delays and costs. The net effect of all of this is the shrinking of the commons from which innovation sprouts, to the detriment of creators, users and society generally.

(ii) Is it an appropriate reward and incentive?

Patents

The exclusivity patents afford to the (first) creator of e-commerce business methods is detrimental to future creators in that it removes core functionalities from the commons without offering commensurate benefits through meaningful disclosure or being an important incentive for future inventors. The software industry has been shown to have grown exponentially in its early stages before patent protection became widespread thereby casting doubt on whether patent protection in fact incentivises innovation in this industry. Further, the delays and costs inherent in acquiring and enforcing patents make this form of protection ill-suited to the rapidly evolving software industry. Finally, the long duration of patent protection invariably exceeds the shelf life of computer programs. This is 'overkill' in that it awards first creators an unduly long term of exclusivity in return for often insufficient disclosure and hampers the creative efforts of future creators for an inordinately lengthy period of time.

Copyright

The main failing of copyright is its possible reach to functional aspects of computer programs due to the concept of non-literal copying and the inherent difficulties in separating expression from idea. Copyright has also been faulted because of its static nature which is at odds with the manner in which programmers frequently improve their programs to eliminate faults or meet consumers' needs. Moreover, like trade secrets, the fact that source code is not disclosed when programs are released makes it a questionable reward. This non-disclosure adds no value to the commons and makes programming inefficient as it may preclude modularisation.

Trade Secrets

It appears that trade secrets are accepted by some creators as an appropriate reward. This is due to its ease of acquisition and flexible costs which are entirely within the control of the creator of the method. However, as argued above, the total lack of disclosure that characterises trade secret protection is detrimental to creators because it adds nothing to the ideas/functionalities commons from which new concepts are drawn. It also prevents the implementation of efficiency enhancing practices such as modularisation. Therefore whilst it is a favoured form of protection, this seems anomalous considering that it makes programming less efficient and may in fact compromise the inter-operability of programs.

(iii) Is it compatible with the nature of computer programs and programming practices?

The protection offered by patents, copyright and trade secrets are incompatible with creators' practices and needs in that they hinder the re-use of code and modularisation which are favoured programming practices. Patents and trade secrets create thickets that compromise efficiency in the programming process and exclude important ideas/functionalities from the commons.

The copyright protection of computer programs is also problematic because of the difficulties in separating function from expression, as noted above. Future creators have to secure copyright licenses to re-use code or set about rewriting their own code which may result in programming inefficiency due to associated costs and delays. In addition, future creators may legitimately reverse engineer or closely study copyright protected computer programs in certain circumstances to enable them to approximate equivalent functionality (known as non-literal copying). However, the effort required to reverse engineer and/or independently create the same functionality arguably leads to inefficiencies in the creative process.

Patent protection precludes reverse engineering and a person who independently creates the same or a similar program may well be sued for patent infringement by the patent holder.

(iv) Cost and ease of acquisition

The costs and delays associated with obtaining patent protection make it an inappropriate form of protection for the fast-paced software industry. Whilst costs and delays are virtually non-existent for copyright or within the sole control of the creator for trade secret protection in South Africa this does not outweigh the disadvantages outlined above. All of these negative effects are pronounced when the creator is a small player, for example an accommodation SME, with limited capacity and resources.

(c) Enabling user access to affordable e-commerce business methods

For users, such as accommodation SMEs, the main need is for affordable and accessible e-commerce business methods. However, the negative impact of IP protection on creators translates into the denial of these user needs. This is because programming inefficiencies, shrinking commons and IP thickets work together to lead to fewer, possibly incompatible and more expensive methods being available. Any such increases in the cost of obtaining access to methods is inappropriate, especially in a developing country such as South Africa where small users (like accommodation SMEs) have great economic potential but often have limited resources. Further, the lack of compatibility or inter-operability between available methods means that they are more difficult to use.

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These arguments are summarised in the table below. The table plots the evaluation criteria (columns 2-7) against each IPR (column 1).

Each criterion is reduced to 1 point to enable scoring in the last column (8). Scores above 50% (or 3/6 points) will be categorised as inequitable.

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IPR	LEGAL CLARITY	CREATOR'S INTERESTS				AFFORDABILITY AND ACCESSIBILITY FOR USERS?	OVERALL EQUITY / score out of 6
		Cost & complexity of acquisition	Compatibility programming practices	Contributes or detracts from the idea/functionality commons	Compatibility with nature of e-commerce business methods		
Patents	No (as such limitation not yet judicially interpreted)	High cost & lengthy delays	Hinders re-use & modularisation of code resulting in inefficient programming & loss of inter-operability	Detracts often provides limited disclosure and creates patent thickets	Incompatible with abstract nature leading to unduly broad patents	No Programming inefficiencies result in expensive methods and compromise ease of use and interoperability	Inequitable 6/6
Copyright	Yes generally but uncertainty with regard to non-literal copying	No costs & delays	Hinders re-use & modularisation resulting in inefficient programming & loss of inter-operability	Detracts protection of undisclosed expression	Incompatible with functional nature and hybrid nature of computer programs leads to difficulties in separating expression from functionality	No Programming inefficiencies result in expensive methods and compromise ease of use and inter-operability	Inequitable 6/6
Trade secrets	Yes	Flexible cost & no delays	Hinders re-use & modularisation resulting in inefficient programming & loss of inter-operability	Detracts Idea and expression kept confidential No disclosure	No incompatibilities identified	No Programming inefficiencies result in expensive methods & compromise ease of use and interoperability	Inequitable 3/6

Table 6: Summary of evaluation of equity [Scorecard]

6.2 Recommendations: Achieving equity

In view of the contestations of, patent, copyright and trade secret protection for e-commerce business methods outlined above it is imperative to consider how a more equitable approach may be achieved. The different stakeholders namely creators, users and society as represented by the state each have some avenues of action open to them which are discussed below.

6.2.1 Society/state

(a) Legislative changes

It is worth considering whether a change of law is both feasible and likely. Four possibilities arise here, namely:

1. the introduction of a *sui generis* scheme protection of computer programs to either replace, or co-exist with, the current IP protection scheme
2. strengthening South Africa's existing patent scheme to reduce the incidence of weak patents.
3. provision for reverse engineering to ameliorate the current anti-competition effects of patent protection
4. narrowing current notions of non-literal copying.

Each of these options is canvassed below.

(i) *Sui Generis* protection

There have been regular calls over the years for the creation of a *sui generis* system for computer programs and e-commerce business

methods.¹ Most notably, in 1979, WIPO unsuccessfully tried to initiate discussions on a treaty for the protection of computer software, which would have followed the *sui generis* approach proposed in its 1978 Model Provisions.² The sole legacy of this attempt seems to be that current definitions of computer programs have their root in the definition proffered by the Model Provisions.³

Such a *sui generis* system would be tailored to meet the unique needs of creators and take the abstract and functional nature of computer programs into account thereby eliminating many, if not all, of the weaknesses in the current system. For example it may require fuller disclosure,⁴ permit independent creation,⁵ enable reverse

¹ See, for example, Samuelson 'Manifesto', Lemley et al Software & Internet Law 45, Diver, Volker Micheal Janich 'Sui generis rights for business methods' (2004) 35 *IIC* 376, Joseph Francis Agnelli III 'Computer programs under the United States intellectual property system: *sui generis* legislation is needed' (2008) 3 *S New Eng Roundtable Symp LJ* 109, John C Phillips '*Sui generis* intellectual property protection for computer software' (1991-1992) 60 *Geo Wash L Rev* 997.

² WIPO International Bureau Report 'Expert Group on the legal protection of computer software' Document LPCS/1/2 (hereafter Document LPCS1/2), WIPO Model provisions on the protection of computer software, Geneva 1978.

³ Caroline B Ncube, 'Copyright protection of computer programs, computer-generated works and databases in Zimbabwe', *The Journal of Information, Law and Technology (JILT)* 2002 (2) at 1 Available at <http://www2.warwick.ac.uk/fac/soc/law/elj/jilt/2002_2/ncube> (last accessed 15 April 2011). s.1 (i) WIPO Model provisions on the protection of computer software defines a computer program as '... a set of instructions capable, when incorporated in a machine readable medium of causing a machine having information-processing capabilities to indicate, perform or achieve a particular function, task or result'.

⁴ For example the WIPO 1979 discussions mooted the possibility of an international system of deposit of computer programs (at paras 16 -18 Document LPCS1/2)

⁵ WIPO Document LPCS1/1 para 14 (l).

engineering⁶ and provide a shorter term of protection.⁷ In many respects it may be similar to existing *sui generis* protection systems for example the protection of semiconductor chips or the European database right.⁸

An important consideration with regard to the introduction of *sui generis* protection is its relationship to existing IP protection. Some scholars have argued for the complete abolition of existing forms of protection⁹ whilst others have pointed out that *sui generis* protection ought to coexist with existing forms of protection.¹⁰ Coexistence raises questions about the scope of protection of each type of protection and fears that this would simply be creating an extra layer of complexity to an already contested area.

There are no indications that a change of law as drastic as abolishing current forms of IP protection is likely to happen in the foreseeable future on the international plane or in any of the three jurisdictions under study. The main reason for the entrenchment of the current forms of IP protection is three-fold.

⁶ Menell (1986) 1371.

⁷ Ibid para 14(m) which suggested maximum term of protection of between 15 to 25 years.

⁸ Ballardini 29. See the US Semiconductor Chip Protection Act of 1984 (17 U.S.C. §§ 901-914) and Directive 96/9/EC of the European Parliament and of the Council of 1996 on the legal protection of databases.

⁹ See note 1 above.

¹⁰ Ballardini 27 - 28.

First, copyright protection of both source and object code is required by TRIPS art 10(2) as shown at section 4.4.1 (b) above. Secondly, TRIPS art 39(2) requires the extension of trade secret protection to confidential information. Thirdly, TRIPS art 27(1) has been interpreted by some as requiring the patent protection of computer programs and business methods because it provides that patent protection should be made available for inventions in all fields of technology. However, as argued at section 3.3.1 (b) above, it appears that this interpretation overlooks the inherent lee-way provided to states by art 27(1). This article provides that patents should be afforded to inventions that are patentable. It is therefore possible for countries' legislation to provide that computer programs and business methods are not inventions (total exclusion). Currently, the EPC, UK Patents Act and the South African Patent Act all provide for a limited exclusion by providing that computer programs and business methods as such are not inventions.

Having mobilised immense resources to achieve the establishment of these forms of protection, it is unlikely that states would have the desire or stamina to begin creating a new international protection scheme.¹¹ More so, when attempts at negotiating another IP treaty,

¹¹ Peter S Menell 'The challenges of reforming intellectual property protection for computer software' (1994) 94(8) *Columbia Law Review* 2644 at 2653.

the Substantive Patent Law Treaty have been ongoing, with multiple starts and stops over the last 15 years.¹²

Whilst legislative changes could be made in South Africa to totally preclude computer program and business method patents, it is unlikely that this will happen because this would be contrary to current global practice. Computer program and e-commerce business method patents are granted by most jurisdictions. The only difference across jurisdictions is whether the approach to such patenting is restrictive or liberal. The following sections make a case for the adoption of a restrictive approach by South Africa and the strengthening of the current patent application process.

The second alternative of creating an international *sui generis* system that coexists with existing IP protection is equally unlikely for the same reasons relating to the entrenchment of existing protection. Moreover, if existing IP protection is retained there will be little motivation for creators to opt for *sui generis* protection.

South Africa's adoption of a national *sui generis* scheme is improbable as this would fly in the face of established international

¹² For commentary on these negotiations see JH Reichman 'Patent Law Harmonisation and the Draft SPLT' Paper presented to WIPO's Open Forum on the Draft Substantive Patent Law Treaty (SPLT), Geneva, Switzerland, 1-3 March 2006 and Graham Dutfield 'Is the world ready for substantive patent law harmonisation? A Lesson from history' in Drahos *Death* 249.

practice. However, South Africa has already shown her mettle by creating a *sui generis* approach to the copyright protection of computer programs. If it was considered appropriate, the country may very well introduce another unique approach. There are as yet no discussions of the desirability of such an approach in South Africa and it seems that such developments are not in the offing.

Perceived international and national impediments to the creation of a *sui generis* system to protect computer programs aside, it is important to consider whether such a system *ought* to be created. There has been significant opposition to such suggestions from proponents of the current system from both academics¹³ and states.¹⁴ The main reasons cited in support of such opposition include the difficulties that would arise in the creation of industry specific laws. Such difficulties relate to drawing boundaries between industries where work falls into multiple fields or industries and fears about opening the floodgates with the possibility that other industries would also call for their own *sui generis* laws.¹⁵ Despite such difficulties, it seems that such a system ought to be created in view of the multiple failures of existing IP protection, as summarised at section 6.1 above. Failing which, meaningful efforts to improve the

¹³ See, for example Ginsburg 'manifest superiority of copyright'.

¹⁴ Karjala 'protecting innovation in computer software' 8 note 21 where reference is made to failed WIPO and Japanese proposals for *sui generis* protection of software.

¹⁵ Ballardini 29.

existing IP protection must be implemented. Several proposals for achieving this are presented below.

(ii) Improving the current patent application process

Questionable software and business method patents are too easily granted in South Africa because the SAPO does not substantively examine applications. Patents are valid until revoked by the courts. This leaves the invalidation of these patents dependent on users, public interest groups or industry rivals of the patent holder. In reality, many of these patents are likely to remain unchallenged in the face of prohibitive court costs (see section 6.2.2 (c) below).

Amending the Patents Act to provide for opposition or peer review before patent grant may be beneficial.¹⁶ This is a better alternative to simply introducing substantive examination because introducing substantive examinations will raise capacity problems resulting in ineffective or inefficient prior art searches. However, an opposition is likely to yield better results because opposition proceedings could be mounted by public interest groups and industry rivals who would be knowledgeable about prior art. Indeed, they would only oppose a patent on the basis of hard evidence of prior art. Another benefit of pre-grant opposition would be that it would be less complex and costly

¹⁶ Anne Layne-Farrar and David S Evans 'Software patents and open source: the battle over intellectual property rights'(2004) 9 *Virginia Journal of Law & Technology* 1 at 30 Available at <<http://ssrn.com/abstract=533442>> (last accessed 15 April 2011).

than post grant invalidation litigation because opposition would be an administrative procedure under the auspices of the SAPO rather than High Court litigation.

(iii) Reverse engineering of patented programs

As indicated above, patents' preclusion of reverse engineering and independent creation has severe anti-competitive effects. Therefore it has been proposed that legislative provision be made to enable reverse engineering and secure protection from infringement suits for independent creators of works identical or similar to patented computer programs.¹⁷ There is no express prohibition of reverse engineering in the patent legislation of the jurisdictions under study¹⁸ but the exclusive rights given to patent holders to make and use the patented program are broad enough to preclude unauthorised reverse engineering.¹⁹ Decompiling a pure computer program to reverse engineer it is using a program also involves making a temporary copy of the program. Reverse engineering has gained legitimacy as an accepted means of securing interoperability²⁰ and therefore ought to be permitted.²¹ Another reason in support of such legislative

¹⁷ Lemley and Burk 1584 and 1621 and Mark A Lemley and Julie E Cohen 'Patent scope and innovation in the software industry' (February 9, 2000). (2001) 89(1) *California Law Review* 1 at 6 and 17 – 25 Available at <<http://ssrn.com/abstract=209668> or doi:10.2139/ssrn.209668> (hereafter Lemley and Cohen) (last accessed 15 April 2011).

¹⁸ Lemley and Burk 18.

¹⁹ Lemley and Burk 19.

²⁰ Lemley and Burk 1621 note 149.

²¹ Menell (1998) 679.

intervention is the limited value of disclosure by computer program patents, discussed in Chapter Three.²²

If statutory provision is not made for reverse engineering, it is still open to courts to use their discretion to use reverse engineering as a policy lever as discussed below at section 6.2.1 (b).

(iv) Rolling back non-literal copying

There have been proposals for the rolling back of remedies for non-literal copying due to the potential for such remedies to extend copyright protection to functional aspects of computer programs. Such extension lends 'patent-like' attributes to copyright.²³ As argued above (at section 4.2.1) this violates the integrity of IP protection. It raises problems about the intersection between patent and copyright law as copyright encroaches into patent scope. In addition, copyright protection of functional aspects is ill-suited to computer programs, programming practices and the software industry generally. Finally, its impediment to innovation and competition is aggravated by the long duration of copyright. As a result confining the scope of copyright protection to literal infringement of computer programs is appropriate.

Such limitation would not leave copyright holders entirely vulnerable as they would still be able to employ other types of IP protection to

²² Burk and Lemley 1691.

²³ Ballardini 4.

secure exclusivity, within reason, over the functional aspects of their computer programs. In particular, they gain ‘significant lead time’ due to the trade secret protection of their source code.²⁴ Contracts, patent law and technological protection measures also enable creators to protect their computer programs’ functionalities.²⁵ Therefore creators, including smaller entities like accommodation SMEs, would not fare badly in a system where copyright protection is confined to literal copying.²⁶

The narrowing of copyright protection to literal copying only may be achieved through the exercise of judicial discretion. However, the difficulties attendant on separating function from expression may require legislative intervention.²⁷ Such legislative provisions could provide detailed guidelines and even a test for the separation of expression from function. For example, South African legislation could partially codify the tests in use in other jurisdictions such as the United States and the United Kingdom. The difficulties in crafting a legislative test may be partially overcome by extensive public and expert consultation. Whilst such a legislative exercise is unlikely to be easy (bearing in mind the problems in settling on judicial tests in the United Kingdom and the United States) it would at least remove the prevailing uncertainty in South Africa.

²⁴ Ballardini 33.

²⁵ Ballardini 36.

²⁶ Ibid.

²⁷ Ibid.

(b) Judicious application of existing protection

Courts²⁸ can achieve a more equitable outcome by interpreting and applying existing laws prudently by utilising policy levers.²⁹ This ought to be done in the light of South Africa's status as a developing country, its constitutional protection of the right to work and its national goal of promoting the growth of SMEs in the tourism industry. This perspective enables the giving of due protection of accommodation SMEs' rights to access affordable e-commerce business methods. On the other hand, creators' interests are to be protected as legally required.

An important policy lever that has been identified for use in the software industry is reverse engineering³⁰ the reasons for which have been outlined above. In practice, courts could develop a reverse engineering defence³¹ for use in appropriate patent infringement cases. For example, such a defence could be accepted where the purpose of the reverse engineering was to create interoperability and enhance ease of use.

South African courts are yet to consider computer program and e-commerce business method patents. It is submitted that the most

²⁸ Patent offices are excluded from this discussion because South Africa has a registration patent system and the patent office does not substantively examine patent applications.

²⁹ Lemley and Burk 1638.

³⁰ Lemley and Burk 1689.

³¹ Lemley and Burk 1691.

equitable result will be achieved by the courts' adoption of the United Kingdom approach which is more restrictive than the European approach. This would ensure that only deserving or patentable programs and methods are protected leading to fewer patents and a reduction of patent thickets. Consequently, creators will find it easier to create new methods resulting in the availability of a wider variety of methods to the benefit of users. The adoption of this restrictive approach would be greatly enhanced by the use of suitable policy levers as discussed above.

It appears that there is state or government preference for a restrictive approach as evidenced by the government's adoption of a FOSS Policy in 2007³² and the following statement by former Minister for Public Service and Administration, Geraldine Fraser-Moleketi made while she was still in office: ³³

³² Government IT Officers Council (GITOC) Open Source Software (OSS) working group 'OSS in Government' <http://www.oss.gov.za/> . The full text of the Policy is available at www.info.gov.za/view/DownloadFileAction?id=94490 > (last accessed 4 March 2011).

³³ For the full text of the speech see FOSSFA 'Address by Ms Geraldine Fraser-Moleketi Minister for Public Service and Administration at the third Idlelo Conference 17 March 2008 Available at <http://www.fossfa.net/index.php?q=node/33>>. For commentary on the speech see Tectonic 'SA minister slams software patents' 18 March 2008 <http://www.tectonic.co.za/?p=2304>>, Edwin Naidu 'Microsoft's mission to make money in a mouse click' Business Report Opinion/Analysis 30 March 2008 Available at <http://www.busrep.co.za/index.php?fSectionId=553&fArticleId=4327006>>, Derek W Keats 'Letter: Misunderstandings over open-source software harm local IT industry' Business Report Opinion/Analysis 6 April 2008 Available at <http://www.busrep.co.za/index.php?fSectionId=553&fArticleId=4337584>> (All last accessed 13 September 2010).

‘Whereas open standards and free software are intended to be inclusive and encourage fair competition, patents are exclusive and anti-competitive in their nature. Whereas there are some industries in which the temporary monopoly granted by a patent may be justified on the grounds of encouraging innovation, there is no reason to believe that society benefits from such monopolies being granted for computer programme "inventions"’.

It will be interesting to observe whether South African courts will bear such considerations in mind when they are finally called upon to adjudicate on the patenting of computer programs and e-commerce business methods.

6.2.2 Users

This section considers the options available to users to ameliorate the situation caused by inequitable IP protection of computer programs and business methods. The options discussed here are remedies under competition law, compulsory licenses and litigation to secure the invalidation of weak patents. It is important to state, at the outset, that none of these options appears viable for accommodation SMEs or other users with limited resources. This is because they all involve litigation which is costly and usually protracted. Therefore it is likely to be beyond the means of such users. Secondly, they are all as yet untested, so there is no precedent that confirms or denies their efficacy making them very risky options. However, their potential is worth outlining, albeit briefly.

(a) Competition law

To date no competition remedies have been awarded in matters relating to IPRs in computer programs in South Africa. In March 2000 the Competition Tribunal refused an application for relief pertaining to the refusal to grant a software license in *DW Intergrators CC v SAS Institute (Pty) Ltd*.³⁴ DW Integrators was a licensed consultant to other licensees of SAS Institute software. DW Integrators had entered into a license agreement with SAS Institute to enable it to offer these consulting services. However, SAS Institute terminated the agreement between it and DW Intergrators due to a dispute between the parties. DW Intergrators then applied to the Competition Tribunal for an order compelling SAS Institute to re-instate the license arguing that the termination of the license amounted to the abuse of a dominant position because it was an exclusionary act and a denial of access to an essential facility in contravention of the Competition Act, 89 of 1998.³⁵

The application failed because the Competition Tribunal found that DW Integrators had not proven that SAS Institute was in a dominant position. In its judgment the Competition Tribunal made it clear that it had a very cautious approach to cases at the intersection of

³⁴ *DW Intergrators CC v SAS Institute (Pty) Ltd* [1999–2000] CPLR 191 (CT).

³⁵ At para 22.

competition law and IP.³⁶ There has been no other application for remedies in relation to IPRs in computer programs. Therefore, competition remedies appear to be of minimal value to accommodation SMEs or other users of e-commerce business methods in their quest for affordability and enhanced access to these methods.

(b) Compulsory licenses

Compulsory licenses are not provided for in the South African Copyright Act but are provided for in the South African Patents Act. The compulsory licensing scheme under s56 of the Patents Act was introduced into the Patents Act in 1997 to ensure compliance with art 31 of TRIPS. Whilst compulsory licenses are usually considered in relation to access to medicines,³⁷ they are available for patents for all

³⁶ At para 18, saying: ‘Caution is particularly well-advised when dealing with the interface between anti-trust and intellectual property We concur with the much-cited decision in *Atari Games Corporation v Nintendo of America Inc* (897 F. 2d 1572 (Fed. Cir. 1990) which warns that “the danger of disturbing the complementary balance struck by Congress is great when a court is asked to preliminarily enjoin conduct affecting patent and antitrust rights. A preliminary injunction entered into without a sufficient factual basis and findings, though intended to maintain the status quo, can offend the public policies embodied in both the patent and anti-trust laws” (at 1577).’

³⁷ For example see Abbot, Abbot & Reichman, Ncube (2009), Matthews and Jerome H Reichman and Catherine Hasenzahl *Non-Voluntary Licensing of Patented Inventions: Historical Perspective, Legal Framework under TRIPS, and an Overview of the Practice in Canada and the United States of America, America*, UNCTAD/ICTSD Capacity Building Project on Intellectual Property Rights and Sustainable Development (Issue Paper No. 5, 2003).

types of inventions, including computer programs.³⁸ Therefore, it is worth considering the import of s56 in some detail.

Theoretically, a potential user of a patented e-commerce business method could make an application for a compulsory license to use that method, if he can prove an abuse of patent rights by the patent holder under s 56(2).³⁹ Sections 56(2) (c) and 56 (2) (d) seem to offer the most potential for users. They cater for scenarios where the patented method is not made available to a meaningful extent on reasonable terms, or where the refusal of a license on reasonable terms is to the

³⁸ See, for example, Lawrence A Kogan *Emerging Risks for U.S. High Tech: How Foreign "Public Interest" Regulation Threatens Property Rights & Innovation* Washington Legal Foundation Critical Legal Issues Working Paper Series (Number 175 December 2010) at 32 -56 Available at <http://www.wlf.org/publishing/publication_detail.asp?id=2221> (last accessed 16 March 2011).

³⁹ S 56 provides:

- (1) Any interested person who can show that the rights in a patent are being abused may apply to the commissioner in the prescribed manner for a compulsory licence under the patent.
- (2) The rights in a patent shall be deemed to be abused if-
 - (a) the patented invention is not being worked in the Republic on a commercial scale or to an adequate extent, after the expiry of a period of four years subsequent to the date of the application for the patent or three years subsequent to the date on which that patent was sealed, whichever period last expires, and there is in the opinion of the commissioner no satisfactory reason for such non-working,
 - (b) –repealed -
 - (c) the demand for the patented article in the Republic is not being met to an adequate extent and on reasonable terms,
 - (d) by reason of the refusal of the patentee to grant a licence or licences upon reasonable terms, the trade or industry or agriculture of the Republic or the trade of any person or class of persons trading in the Republic, or the establishment of any new trade or industry in the Republic, is being prejudiced, and it is in the public interest that a licence or licences should be granted, or
 - (e) the demand in the Republic for the patented article is being met by importation and the price charged by the patentee, his licensee or agent for the patented article is excessive in relation to the price charged therefor in countries where the patented article is manufactured by or under licence from the patentee or his predecessor or successor in title.

prejudice of a class of persons trading in South Africa (for example accommodation SMEs) and where it would be in the public interest to grant such a license. Therefore if an e-commerce business method patent holder offers to license the method to an accommodation SME at unreasonably high charges and refuses to lower these, hypothetically a case for a compulsory license could be made. Such a case could assert that the refusal to agree to reasonable terms prejudices accommodation SMEs and that this is harmful to the national economy in view of accommodation SMEs' contribution to GDP. Accordingly, it would be in the public interest to issue a compulsory license. However, it is unlikely that such an application would be made, considering that s 56 has not found application in the context of access to medicines, for which a public interest argument is most readily made.⁴⁰ Further, as many accommodation SMEs rely on off the shelf packages, the easiest option for them would be to simply purchase a more affordable alternative.

(c) Litigation for the invalidation of patent protection

An accommodation SME could litigate to have a patent on an e-commerce business method, it wishes to use, invalidated to enable free access to that method. However, this is a far-fetched possibility due to the costs and delays attendant on litigation and the lack of certainty

⁴⁰ Ncube (2009) 687, Kaplan 5, Frank Sacco 'A Comparative Study of the implementation in Zimbabwe and South Africa of the international law rules that allow compulsory licensing and parallel importation for HIV/AIDS Drugs' (2005) 5 *African Human Rights LJ* 105 at 117.

with regard to the meaning of the limited computer program exclusion in the South African Patents Act. It is more likely that a public interest group would institute such proceedings as it would have access to more expertise and financial resources than a user, as the episode described below, shows.

In 2005 South African public interest groups led by Freedom to Innovate South Africa (FTISA) announced their intention to make a court application for the invalidation of Microsoft's XML patent⁴¹ which was patented in South Africa in 2004.⁴² This invention was criticised for being sub-patentable, because it was a computer program as such, lacked novelty and inventive step and was inadequately disclosed.⁴³ However, an application for revocation was not subsequently filed perhaps due to the prohibitive court costs that

⁴¹ Alastair Otter 'Local organisations challenge Microsoft XML patent' 29 June 2005 Available at < <http://www.tectonic.co.za/wordpress/?p=497> > (last accessed 16 March 2011), Tectonic 'XML opposition headed to court?' 30 September 2005 Available at <<http://www.tectonic.co.za/?p=632>> (last accessed 19 March 2011).

⁴² ZA200303346 'Summary of the invention' Available at <<http://v3.espacenet.com/publicationDetails/description?CC=ZA&NR=200303346A&KC=A&FT=D&date=20040422&DB=&locale=>>> (last accessed 16 March 2011).

⁴³ Jolliffe 'word processing patent' 222- 224, Derek Keats 'Let us not create patent minefields in Africa' (2006) *iweek* Available at <<http://www.iweek.co.za/ViewStory.asp?StoryID=165569>> (last accessed 16 March 2011): '[the patent] suggests that Microsoft invented the idea and method of XML word-processing, which is an absurd claim given that other applications already use this technology and that it is using XML for its intended purpose. It is not unlike patenting putting lettuce into a shopping bag because you want to obtain royalties from everyone who puts lettuce into a shopping bag. It is shallow, trivial and absurd, but all too common in the software patent world'.

would have been involved⁴⁴ or because the patent was refused in the US and had been amended voluntarily by Microsoft in New Zealand in the face of OSS (Open Source Software) movement opposition there.⁴⁵ The US and New Zealand developments made it clear that the patent was not viable and Microsoft acknowledged that it would not be asserting it against anyone. FTISA thus did not have to pursue the application for revocation.

6.2.3 Creators

Creators could also contribute to the creation of a more equitable environment by opting out of the patent, copyright and trade secret system. However, simply opting out of traditional IP protection leaves creators without the conventional means for extracting reward and remuneration for their IP protected creations and leaves the creations open to misappropriation. It also leaves the creator vulnerable to infringement claims from others who have IP protection over identical or similar computer programs.

Therefore, working from within the existing IP protection scheme but using balancing tools to benefit both creators and users is an attractive option. Examples of such balancing tools include the use of

⁴⁴ Alastair Otter 'SA patent opposition could be costly' Available at <<http://www.tectonic.co.za/?p=1135>> 29 August 2009 (last accessed 16 March 2011).

⁴⁵ Alastair Otter 'OSS group claims Microsoft patent victory' 28 August 2006 Available at <<http://www.tectonic.co.za/?p=1133>> (last accessed 16 March 2011).

free software⁴⁶ or OSS⁴⁷ (together FOSS) and open business methods⁴⁸ to create new methods and to operate e-commerce websites.⁴⁹ There are several business models that make it possible for the creator to generate significant revenue whilst using such balancing tools. In addition, creators benefit from a more vibrant ideas/functionality commons and resulting programming efficiencies. Under such an arrangement, both users and creators benefit significantly.

Appropriately drafted licenses need to be used to secure the rights of access and use for users as well as recognition and the possibility of

⁴⁶ Free software is 'software that comes with permission for anyone to use, copy, and distribute, either verbatim or with modifications, either gratis or for a fee. In particular, this means that source code must be available' per FSF 'categories of free and non-free software' Available at <<http://www.gnu.org/philosophy/categories.html>>, see also 'The free software definition' Available at <<http://www.gnu.org/philosophy/free-sw.html>> (both last accessed 4 March 2011)).

⁴⁷ Open source software is 'software that is released with its source code under a licence approved by the Open Source Initiative (OSI)' per Neeshal Munga and Thomas Fogwill 'An Analysis of the value that open source contributes to business models' IST-Africa 2009 Conference and Exhibition, Kampala, Uganda, 6 - 8 May 2009 at 2. See also Ken Coar 'The open source definition – annotated' version 1.9 Available at <<http://www.opensource.org/docs/definition.php>>, Michael Tiemann 'History of the OSI' Available at <<http://www.opensource.org/history>> (both last accessed 4 March 2011)).

⁴⁸ Open business methods are based on content licensed under creative commons licenses or other types of similar licenses, or content that is in the public domain. See P2P Foundation 'Open Business' Available at <http://p2pfoundation.net/Open_Business>. There are a number of websites on which an enterprise can find open business models and methods For example: Open Business <<http://openbusiness.cc/about>>, Open Process Handbook Initiative <<http://ccs.mit.edu/ophi/index.htm>>, Open Business Models <<http://socialsynergyweb.net/cgi-bin/wiki/OpenBusinessModel>> (all last accessed 4 March 2011).

⁴⁹ Munwar Shariff (7 November 2006) 'Open source BPM tools to automate your business processes' Available at <www.cignex.com/files/DL_20061107_ECMWest2006_OpenSourceBPMTools.pdf> (last accessed 4 March 2011) (hereafter Shariff 'Open source BPM'), C de Villers and Tshaya.

extracting revenue for creators. Such licenses have been developed for copyright. They have gained significant acceptance, are freely available on the internet and are widely used. These are discussed below at section 6.2.3 (a). On the other hand, the development and deployment of similar licenses for patented technology is still in its nascent stages.⁵⁰ The possibility of a similar approach to trade secrets and the development of 'open secrets' licensing is also currently being explored in scholarly publications.⁵¹ As patents and trade secret licensing schemes are not yet fully developed, they will not be discussed further.

(a) FOSS and open business

FOSS and open business methods are copyright protected but they are published with a license granting access to the source code under

⁵⁰ Source Seeker 5 July 2010 'The Defensive Patent License makes patents less evil for open source'. Available at <<http://www.networkworld.com/community/node/60939>> (last accessed 18 March 2011), Florian Mueller 'The DPL and the 'Fair Troll' business model: make money fighting patents with patents'. Available at <<http://fospatents.blogspot.com/2010/05/dpl-and-fair-troll-business-model-make.html>> (last accessed 18 March 2011). For an example of the consideration of the same concept in the context of biotech inventions see Van Overwalle, Geertrui 'Individualism, Collectivism and Openness in Patent Law. Promoting Access through Exclusion' in *The Law and Theory of Trade Secrecy: A Handbook of Contemporary Research*, Rochelle Dreyfuss and Katherine Strandberg (eds.), Edward Elgar Publishing (forthcoming 2011) and Boettiger and Burk.

< <http://ssrn.com/abstract=1718687>> (last accessed 18 March 2011).

⁵¹ Geertrui Van Overwalle 'Uncorking Trade Secrets: Sparking the interaction between trade secrecy and open biotechnology', in *The Law and Theory of Trade Secrecy: A Handbook of Contemporary Research*, Rochelle Dreyfuss and Katherine Strandberg (eds.), Edward Elgar Publishing (forthcoming 2011). Available at < <http://ssrn.com/abstract=1720082>> (last accessed 18 March 2011).

certain conditions.⁵² Examples of the most frequently used licenses include the Open Software License 3.0,⁵³ and the GNU General Public License 3.0.⁵⁴

Creators of e-commerce business methods stand to benefit from making the source code of their methods publicly available in a number of ways. First, they do not give up their IPRs and therefore retain recognition and respect for their efforts. A person who wishes to make computer programs, business models or methods available to others must first assert their ownership of IPRs in the material. Secondly, these creators do not have to forego economic rewards for their material. FOSS may be charged for.⁵⁵ However, the more popular business model is to provide the computer programs at no cost but to thereafter charge market-related fees for related hardware, training,

⁵² Jeremy Spere's 'The enforceability of open source software licences: can copyright licences be granted non-contractually?' (2009) 21 *SA Merc LJ* 174 at 175. Also see Gonzalez, Andres Guadamuz 'Legal challenges to open source licences' (2005) *Script-ed* 257

⁵³ Available at <<http://www.opensource.org/licenses/osl-3.0>> (last accessed 18 March 2011).

⁵⁴ Available at <<http://www.gnu.org/licenses/gpl.html>> (last accessed 18 March 2011).

⁵⁵ The reference to freedom here does not refer to the cost of obtaining the software but to the ability to adapt the software. See FSF 'The Free Software Definition' <<http://www.gnu.org/philosophy/free-sw.html>> (last accessed 4 March 2011): By definition free software provides the following four freedoms:

'The freedom to run the program, for any purpose (freedom 0). The freedom to study how the program works, and adapt it to your needs (freedom 1). *Access to the source code is a precondition for this.* The freedom to redistribute copies so you can help your neighbor (freedom 2). The freedom to improve the program, and release your improvements to the public, so that the whole community benefits (freedom 3). *Access to the source code is a precondition for this.*' (My emphasis).

technical support, customisation or maintenance.⁵⁶ In addition such creators benefit from the cost and effort reduction⁵⁷ that results from the co-operative effect of communal development that characterises FOSS and open methods.⁵⁸

For users, the adoption of FOSS and open business methods would eliminate any cost, delays and complexities attendant on licensing negotiations for commissioned computer programs and the need to purchase off-the-shelf packages. Further, as the source code is available (unlike with most proprietary software) it is possible for users to customise the computer programs or e-commerce business methods to meet their peculiar needs and preferences. In addition it appears that in many instances FOSS and open business methods are of superior quality than proprietary computer programs and methods,⁵⁹ which is partly attributable to the 'pooling [of the] intellect of various developers'.⁶⁰

⁵⁶ Sandeep Krishnamurthy 'An Analysis of Open Source Business Models' (2003) Available at <<http://ssrn.com/abstract=650001>> (last accessed on 4 February 2011) at 2-3, Chesbrough and Appleyard at 65 - 66.

⁵⁷ Dirk Riehle 'The economic motivation of open source software: Stakeholder perspectives' (2007) *Computing Practices* 25 at 31, Jacco Wesselius 'The bazaar inside the cathedral: Business models for internal markets' (2008) *IEEE Software* 61 at 62 - 63.

⁵⁸ For an example of such collaboration see the account in Eric Steven Raymond *The Cathedral and the Bazaar: Musings on Linux and Open Source by an Accidental Revolutionary* (1999).

⁵⁹ James Bessen 'Open source software: free provision of complex public goods' in Jürgen Bitzer and Philipp J. H. Schröder (ed.s) (2006) *The Economics of Open Source Software Development* 57 at 57-58.

⁶⁰ Henry W Chesbrough and Melissa M Appleyard 'Open Innovation and Strategy' (2007) 50(1) *California Management Review* 57 at 64 (hereafter Chesbrough and Appleyard).

FOSS and open business methods are informed by an instrumentalist attitude to IP⁶¹ and are thus compatible with the public interest approach advanced by this study. In particular, they are appropriate for an emerging economy, such as South Africa because they enable participation in economic activity by SMEs that may otherwise have not been able to do so. In addition, FOSS and open business methods avoid the proliferation of computer program patent thickets that have been shown to impede innovation.

6.3 Concluding remarks

This thesis has found that current patent, copyright and trade secret protection of computer programs generally and particularly for e-commerce business methods is inequitable from both a creator's and user's perspective as summarised and illustrated at section 6.1 above. The key findings that support this conclusion are the negative impact this protection has on innovation and competition due to:

- i. its shrinking effect on the idea/functionality commons,
- ii. its incompatibility with programming practices which favour re-use and are sequential, and
- iii. its incompatibility with the functional, expressive and abstract nature of computer programs.

⁶¹ Open Business Models <<http://socialsynergyweb.net/cgi-bin/wiki/OpenBusinessModel>> (last accessed 4 March 2011): 'An open business model tends to create some degree of an open value network of exchanges among the users and producers. Knowledge and information exchanges are curated and grown in a knowledge commons. Value exchanges are transparent when possible. Intellectual property is by default not hoarded, nor made scarce, but released under a license that allows for different types of re-use. The goal is to generate "positive externalities".'

In such an inequitable environment, creators are unable to thrive or compete efficiently and users are deprived of affordable access to e-commerce business methods which is a pre-requisite for successful e-commerce entrepreneurship.

Accommodation SMEs fare badly in such an environment, because they are small players and are often both resource and expertise-poor. They may be unable to operate optimally or at all due to restrictive protection which leads to expensive methods and hampers their own creative efforts. This is undesirable for South Africa which has a constitutionally protected right to work (which encompasses the right to engage in entrepreneurship) and prioritises the creation of an enabling legal environment for SMEs generally, and particularly in the tourism industry.

In view of this inequity, several alternatives to patent, copyright and trade secret protection were probed at section 6.2 above. These alternatives are:

- i. A change of law to replace the existing IP protection of computer programs with *sui generis* protection or to have both systems coexisting side by side
- ii. A change of law to improve existing IP protection. For example by introducing pre-patent grant opposition proceedings or a patent peer review mechanism; a statutory reverse engineering

provision in the Patents Act or by partially codifying the approach to non-literal copying in the Copyright Act.

- iii. Judicious application of existing IP protection by the courts. For example the adoption of a restrictive approach to the patenting of computer programs, modelled on the United Kingdom approach accompanied by a judicially created reverse engineering defence.
- iv. The use of competition law remedies, compulsory licenses and applications for the revocation of weak computer program patents by users, competitors and public interest groups; and
- v. The use of balancing tools such as FOSS and open business by creators.

Of these alternatives, a few emerge as both unfeasible and unlikely. These are the complete abolition of the existing types of IP protection accompanied by a replacement with a *sui generis* scheme and the use of competition law, compulsory licenses and litigation to revoke patents. This is primarily due to existing international obligations and practices entrenching existing IP protection, the general unsuitability of the litigation options for SMEs and the unclear legal position relating to patents. Further, competition remedies and compulsory licenses have slim chances of success in a commercial setting such as the use of e-commerce in tourism.

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The remaining options are more viable as they are premised on leveraging existing protection to the benefit of both users and creators. Precedents already exist from other jurisdictions, such as the United Kingdom, for a restrictive approach to patenting. Similarly, models of good pre-patent grant opposition and peer review mechanisms exist, for example in the United States. Finally, a small but significant segment of the software industry has embraced FOSS and open business methods, as has the South African government.

The adoption of any of these options will enable accommodation SMEs, the tourism industry and ultimately, South African economy generally, to benefit from e-commerce

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Appendix 1: Adelphi Charter

Humanity's capacity to generate new ideas and knowledge is its greatest asset. It is the source of art, science, innovation and economic development. Without it, individuals and societies stagnate.

This creative imagination requires access to the ideas, learning and culture of others, past and present. And, in the future, others will use what we have done. Human rights call on us to ensure that everyone can create, access, use and share information and knowledge, enabling individuals, communities and societies to achieve their full potential.

Creativity and investment should be recognised and rewarded. The purpose of intellectual property law (such as copyright and patents) should be, now as it was in the past, to ensure both the sharing of knowledge and the rewarding of innovation.

The expansion in the law's breadth, scope and term over the last 30 years has resulted in an intellectual property regime which is radically out of line with modern technological, economic and social trends. This disconnect threatens the chain of creativity and innovation on which we and future generations depend.

We therefore call upon governments and the international community to adopt these principles:

- 1. Laws regulating intellectual property must serve as a means of achieving creative, social and economic ends and not as ends in themselves.*
- 2. These laws and regulations must serve, and never overturn, the basic human rights to health, education, employment and cultural life.*
- 3. The public interest requires a balance between the public domain and private rights. It also requires a balance between the free competition that is essential for economic vitality and the monopoly rights granted by intellectual property laws.*
- 4. Intellectual property protection must not be extended to abstract ideas, facts or data.*
- 5. Patents must not be extended over mathematical models, scientific theories, computer codes, methods for teaching, business processes, methods of medical diagnosis, therapy or surgery.*
- 6. Copyright and patents must be limited in time and their terms must not extend beyond what is proportionate and necessary.*
- 7. Government must facilitate a wide range of policies to stimulate access and innovation, including non-proprietary models such as open source software licensing and open access to scientific literature.*
- 8. Intellectual property laws must take account of developing countries' social and economic circumstances.*

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industry**

9. *In making decisions about intellectual property governments should adhere to the following rules:*
- *There must be an automatic presumption against creating new areas of intellectual property protection, extending existing privileges or extending the duration of rights.*
 - *The burden of proof in such cases must lie on the advocates of change.*
 - *Change must be allowed only if a rigorous analysis clearly demonstrates that it will promote people's basic rights and economic well-being.*
 - *Throughout, there should be wide public consultation and a comprehensive, objective and transparent assessment of public benefits and detriments.*

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