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The Role of Telecommunication Standards in European Integration

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Master's Thesis

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ABSTRACT

“The Role of Telecommunications Standards in European Integration” analyses the process of harmonisation for European telecommunications terminal equipment standards from 1958-1996. The M.A.Thesis focuses on Commission legislation dealing with telecommunications standards enacted in the Treaty of Rome up to the Maastricht Treaty with a special focus on the “New Approach to Technical Harmonisation and Standardisation”. This thesis also looks at the application of the Low Voltage Directive 73/23/EEC and the Electromagnetic Compatibility Directive 89/336/EEC, and shows in practice, how European integration affected the national transposition of these directives into law and moreover, how the designated standards in these directives were harmonised. The final section assesses the implementation of European harmonised standards under the low voltage directive and electromagnetic compatibility directive into Member State legislation during 1996. And finally, in order to make a contribution to European Integration studies, the role of telecommunication standards is also placed within the framework of political European Integration Theory.

A professor once told me that my thesis was more about family history than the history of technology. In fact, it was not so long ago that my father and I would spend late nights imagining how the world would be in the 21st century. Sometimes these kitchen chats would evolve into deep Cognac sipping discussions about the future of globalization and the importance of telecommunication standardization. Most of the time, I figured dad was merely blowing off steam from another overseas business trip. Little was I aware of the value of such midnight conversations.

This thesis has been an attempt to piece together the memory of these midnight conversations which at the time, seemed too technical to take note of. Moreover, it has been a direct attempt to decipher boxes of my father's notes which I inherited dealing with the evolution of telecommunication standardization within the European Community, and other parts of the globe. Dad worked as a civil servant for the Canadian Ministry of Industry and the former Department of Communications on telecommunication standardization for terminal equipment. He passed away suddenly at work on August 23rd, 1994.

My thesis has not relied solely on dad's notes, though they have guided the direction of my research. Most of my research relied on European Commission legislation found at the EU delegation headquarters here in Ottawa. Along the way, I also interviewed key officials involved with European telecommunication standardization in both the public and private sectors. In particular, during the first year of my M.A., I interviewed the director for "Homologation and Standardization" at Newbridge Networks in Kanata, Ontario. Following this thesis meeting in early February 1996, Newbridge offered me a summer contract analysing the application of telecommunication standards across the European Economic Area. This research with Newbridge helped me write the final chapters of my thesis and certainly enriched my knowledge of European telecommunication standards and European integration.

I am indebted to many people who made this thesis possible. These include the colleagues I interviewed both at Newbridge Networks and at the Canadian Ministry of Industry and the Ministry of Foreign Affairs, the librarians at the EU delegation and the Standards Council of Canada who managed to smile everytime I asked them for rare pieces of legislation, and my thesis supervisor for her wisdom and patience. Most of all, I am indebted to my mother who during one of my more difficult moments, kept the boxes of my father's notes and diligently suggested that I should look at them more closely. Without my mother's insight, this M.A. thesis topic and my new career in European telecommunication approvals would never have been possible.

On a final note, I'd like to dedicate this thesis to my father, Felice G. Diamente who is most probably sipping Cognac somewhere above while shaking his head and saying: "Lord help us, the artsies (or the "sandles and beads" as he usually called them) have taken over the techies !" I'd like to defend this statement by saying that I don't think that we've overtaken the engineering profession, but I definitely think that we have a lot to offer to this field.

Glossary

CE	Conformité européenne
CEC	Commission of the European Communities
CEN	Comité européen de normalisation
CENELEC	Comité européen de normalisation électrotechnique
CEPT	Conférence européenne des administrations des postes et des télécommunications
EC	European Community
ECSC	European Coal and Steel Community
ECU	European Currency Unit
EEA	European Economic Area (Agreement)
EEC	European Economic Community
EEC Treaty	Treaty Establishing the European Economic Community/ Treaty of Rome
EFTA	European Free Trade Area (Agreement)
EMC	Electromagnetic Compatibility
ENs	European Norms or standards
ETSI	European Telecommunications Standards Institute
EU	European Union
EURATOM	European Atomic Energy Community
GATT	General Agreement on Tariffs and Trade
IEC	International Electrotechnical Commission
IC	Industry Canada
ISDN	Integrated Services Digital Network
ISO	International Organization for Standardization
ITU	International Telecommunications Union
PTTs	Post, Telegraph and Telecommunications Organizations (Member State PTTs)
SCC	Standards Council of Canada
Telecoms	Telecommunications

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Chapter 1:

The Role of European Telecommunication Standards in European Integration

The standardization of the European telecommunications industry has revived previous notions of European integration. It has shed a new light on both the history of European integration, and integration theory, most notably political integration theory, by showing that strong institutional structures such as the European Commission can play a very positive leadership role in regional integration. In particular, the standardization of European telecommunications has proven that successful European integration can be achieved in a key industrial sector such as telecommunications, despite the controversy over integration theory and the pessimism regarding the history of postwar European integration.

European Integration and Integration Theory: the controversy

Over the last fifty years, spanning from the end of the Second World War up to the 1992 Maastricht Treaty, the evolution of the European Community has been accompanied by a parallel evolution of regional integration theory. During this fifty year period, the growth of the European Community has sparked much controversy; the theories of European integration have also seen the same reaction. Authors such as Paul Taylor, Stanley Hoffman, Leon Lindberg, Donald Puchala and Ernst Haas have all criticized European integration theories as they relate to the process of European integration during the 1960s and '70s.¹ All

¹These authors of course are not the only ones who criticize Integration Theory as it relates to the European Community, however, their works do represent the main arguments. The main titles are: AJR Groom and Paul Taylor. *Functionalism: Theory and Practice in International Relations*. (University of London Press, 1975); Stanley Hoffman, "Obstinate or

of these authors have concluded that political integration theories cannot fully explain the events surrounding the evolution of the European Community, because the concepts they initially used to describe the process of integration in the 1950s and 1960s were unable to explain changes within the European Community. Indeed, the main theories were widely dismissed during the European Community's greatest crisis in the 1960s, when both debate over the Common Agricultural Policy and de Gaulle's highly nationalist stance put fundamental institutional power structures such as the European Commission and the European Council into question.² The stagnation of European integration in the 1960s indeed led many scholars to question the very possibility of creating any meaningful political integration theory for the European context. Historian Michael Hodges, for example, stated that European integration was a "non-event":

It [European integration] is a non-event in the sense that the growth of a single community in Western Europe as a result of collaboration between hitherto autonomous states is a complex, diffuse and unfinished process almost impossible to pin down.³

Obsolete? The Fate of the Nation-State and the Case of Western Europe", *Daedalus*, 95 (1966); Leon N. Lindberg, "Integration as a Source of Stress on the European Community System", *International Organization*, 20 (1966); Donald J. Puchala, "Patterns in West European Integration", *Journal of Common Market Studies*, 9 (1970-71); Paul Taylor. *The Limits of European Integration*. (Croom Helm, 1983) and Ernst Haas. *The Obsolescence of Regional Integration theory*. (University of California, Institute of International Studies, 1975).

²It is difficult in such a brief space to list all of the main events surrounding the crisis of European Integration Theory. The Common Agriculture Policy in the 1960s and conflict with French President de Gaulle has been treated more in depth in the following works: Nina Heathcote, "The Crisis of European Supranationality", in *Journal of Common Market Studies*. 5 (1966-67); Stanley Hoffman, "Reflections on the Nation-State in Western Europe Today", *Journal of Common Market Studies*, 21 (1982); John Pinder, "Positive or Negative Integration: Some Problems of Economic Union in the EEC", *The World Today*. 24 (1968).

³Michael Hodges, *European Integration*, (Penguin Books, 1972), p. 9.

Donald Puchala compared European integration theory to the episode of "the blind man and the elephant":

The experience of scholars who have been conceptually grappling with contemporary international integration is not unlike the episode of the blind man and the elephant. More than fifteen years of defining, redefining, refining, modelling and theorizing have failed to generate satisfactory conceptualizations of exactly what it is we are talking about when we refer to 'international integration' and exactly what it is we are trying to learn when we study this phenomenon.⁴

Telecommunications as an example of European Integration

This thesis argues that European integration, despite the criticism of many scholars, is "an event", at least in the domain of telecommunications. In particular, this thesis focuses on the integration of European telecommunications terminal equipment standards during the period from the establishment of the European Community in 1958 up to 1996.

Telecommunications is used as a case study of integration due to its importance as a key sector for the emerging "Information Society."⁵ More specifically, this thesis analyses

⁴The story of blind men and elephants can be briefly summed up as follows: Several blind men approached an elephant and each touched a different part of the large animal. Hence, the blind man who felt the animal's trunk concluded that an elephant must be tall and slender, while his fellow who touched the beast's ear concluded that an elephant must be long and flat. The total result was that no man arrived at a very accurate description of the elephant. Yet, each man had gained enough evidence from his own experience to disbelieve his fellows and to maintain a lively debate about the nature of the beast.

Donald J. Puchala, "Of Blind Men, Elephants and International Integration", *Journal of Common Market Studies*, 4 (1972), p. 267.

⁵The importance of the European telecommunications industry and standards will be discussed in Chapter 2. Some of the primary European documents which emphasize telecommunications are: *Green Paper on the Development of the Common Market for Telecommunications Services and Equipment*, COM(87) 290, 30 June 1987; *European File 15188- Telecommunications: The New Highways for the Single European Market*. (European Commission: October 1988); "Towards a Competitive Community-wide Telecommunications market in 1992", *Communication from the Commission Implementing the Green Paper on the Development of the Common Market for Telecommunications Services and Equipment*,

telecommunications "terminal equipment" standards. Telecommunications terminal equipment is defined by the European Commission as "equipment intended to be connected to the public telecommunications network".^{6,7} (Please refer to Annex 1 for a better illustration of telecommunications equipment.) A standard is defined by the United Nations Economic Commission for Europe as:

...a technical specification or other document available to the public, drawn up with the cooperation and consensus or general approval of all interests affected by it based on the consolidated results of science, technology and experience, aimed at the promotion of optimum community benefits and approved by a body recognised on the national, regional or international level.⁸

Telecommunications terminal equipment standards are analysed in this thesis because they are considered to be "an indispensable prerequisite for the creation of the European Common Market."⁹

COM(88) 48 final.

⁶A public telecommunications network is defined as: "public telecommunications infrastructure which permits the conveyance of signal between defined network termination points by wire, by microwave, by optical means or by other electromagnetic means. "Chapter 1, Article 1.2", *Directive of 29 April 1991 on the approximation of the laws of the Member States concerning telecommunication terminal equipment, including the mutual recognition of their conformity*, 91/263/EEC, OJ No. L 128/1.

⁷Chapter 1, Article 1.2", *Directive of 29 April 1991 on the approximation of the laws of the Member States concerning telecommunication terminal equipment, including the mutual recognition of their conformity*, 91/263/EEC, OJ No. L 128/1.

⁸Please note that all of these definitions will be re-explained in Chapters 2 and 4. *Standardization in the European Market*, (Delegation of the European Union in Canada: April 1993), p. 4.

⁹George Symeonidis, "European Telecommunications Environment in the 1990s", *Telecommunications Policy*. 14 (1990), p. 452. This point shall also be elaborated on in Chapter 2. Some of the documents which support this view are: Wilhem F. Pfau and Antoine Thiard, *Research & Development and Standardization*, (European Commission and

The method used to analyse the process of integration in the European telecommunications industry will be two-fold. Firstly, this thesis will examine the legislation enacted by the European authorities, (the European Commission and the European Council) between the years 1958-1992. This analysis will show what kind of institutional action was taken for the integration and harmonisation of standards in general and telecommunications terminal equipment standards in particular. Chapter 2 will examine the early legislation enacted by the European Commission between the years 1958-1983 and the problems associated with the European telecommunications industry. To motivate these issues, Chapter 2 first analyses why standards are important, why harmonised standards are necessary for a regional telecommunications sector such as that of the European Community, and most of all, why standards have been a problem for the European Community. Chapter 3 looks at the wave of legislation since 1983 that marked the European Commission's "New Approach" to standardization. The legislation dealing specifically with telecommunications and terminal equipment standards will also be discussed in order to show what the European Commission did to change European telecommunications and how it became a globally competitive sector.

Secondly, this thesis will analyse the implementation of two types of terminal equipment standards in each Member State of the European Union to assess the practical level of integration achieved by 1996. In particular, the evolution and practical implementation of the harmonised "low voltage" and the "electromagnetic compatibility" standards will be analysed. Both of these categories of harmonised standards are mandatory for the approval

EFTA, 1992). The following European Commission directives also support this view: 84/549/EEC; 86/546/EEC; COM(87) 290; COM(88) 712; COM(90) 456.

of telecommunications terminal equipment across the European Community. Chapter 4 will explain the "low voltage" and "electromagnetic compatibility" standards, how they are implemented by individual Member States, and their importance for the integration of European telecommunication terminal equipment. Chapter 5 will then provide a detailed account of the "standards situation" in each Member State of the European Union for these two standards. This analysis will reveal the practical success rate of telecommunications standards integration within Western Europe.

The importance to history

The originality of this thesis does not lie in its chosen subject matter. Many authors such as Eli Noam, Charles Sullivan, Robert Crandall, Kenneth Flamm, Landis Gabel, Richard Hawkins, Richard Mansell, Gareth Locksley, Reck Dickson, Alan Skyes and Stanley Besen, Jacques Pelkmans, Andrew Macpherson, Gerd Wallenstein, Godefroy Dang-Nguyen, William Wallace, Wayne Sandholtz and John Horrocks have written about the process of integration for European telecommunications and also about standards.¹⁰ However, except for

¹⁰The main titles for each of these authors are: Eli Noam, *Telecommunications in Europe*, (Oxford University Press, 1992); Eli Noam, Harvey Sapolsky, Rhonda Crane, Russell Newmann ed. *The Telecommunications Revolution: Past, Present and Future*, (Routledge, 1992); Charles D. Sullivan, *Standards and Standardization: Basic Principles and Applications*, (Marcel Dekker, 1983); Robert Crandall and Kenneth Flamm ed., *Changing the Rules: Technological Change, International Competition and Regulation in Communications*, (The Brookings Institution, 1989); Landis Gabel, *Competitive Strategies for Product Standards*, (McGraw Hill, 1991); Richard Hawkins, *Standards for Technologies of Communication: Policy Implications of the Dialogue Between Technical and Non-Technical Factors* (Ph.D. Philosophy dissertation, University of Sussex, 1993); Richard Hawkins and Richard Mansell ed., *Standards, Innovation and Competitiveness: The Politics and Economics of Standards in Natural and Technical Environments*, (Edward Elgar Publishing, 1995); Gareth Locksley, *The Single European Market and The Information and Communication*

Eli Noam, Richard Hawkins, Richard Mansell, Gareth Locksley, Jacques Pelkmans, William Wallace, Wayne Sandholtz, and Godefroy Dang-Nguyen, most writers have been engineers analysing telecommunications solely for the technical field.¹¹ The subject of telecommunications and more specifically telecommunication standardization as a significant modern instance of integration has been largely overlooked by historians. Most of the scholars mentioned are engineers, political scientists, or economists. This is not surprising, as the study of telecommunications has traditionally been a technical field. Eli Noam even

Technologies, (Belhaven Press, 1990); Dickson Reck ed., *National Standards in a Modern Economy*, (Harper & Brothers, 1975); Jacques Pelkmans, "The New Approach to Technical Harmonization and Standardization", *Journal of Common Market Studies*, 25 (1975); Gerd Wallenstein, *Setting Global Telecommunication Standards: The Stakes, The Players & The Process*, (Artech House, 1990); Andrew Macpherson, *International Telecommunications Standards Organizations*, (Artech House, 1990); Godefroy Dang-Nguyen, Raymund Werle and Volker Schneider, "Corporate Actor Networks in European Policy Making: Harmonizing Telecommunications Policy", *Journal of Common Market Studies*, 32 (1994); William Wallace, *The Dynamics of European Integration*, (Royal Institute of International Affairs, 1990); William Wallace, *Regional Integration: The West European Experience*, (The Brookings Institute, 1994); Wayne Sandholtz, "Institutions and Collective Action: The New Telecommunications in Western Europe", *World Politics*, 45 (1993). John Horrocks from the British Department of Trade and Industry has published a series of CD ROMs and engineering guides examining the implementation of harmonised standards within the EC.

¹¹Undoubtedly there are other academics who have written about telecommunications and standardization. Some of the officials from the European Commission and the OECD have written about standards including Antoine Thiard, Wilhem Pfau, Herbert Ungherer, Nicholas Costello and Georges Ferné: Antoine Thiard and Wilhem F. Pfau, *Research & Development and Standardization: A Guide*, (European Commission and EFTA, 1992); Herbert Ungherer and Nicholas Costello, *Telecommunications in Europe*, (European Commission, 1988); Georges Ferné, "Information Technology Standardization and Users: International Challenges Move the Process Forward" in Brian Kahin and Janet Abbate ed., *Standards Policy for Information Infrastructure*, (MIT Press, 1995). The French journal *Culture Technique* also published a special edition on standardization with articles discussing the importance of European integration in telecommunications standards. "La normalisation technique: édition spéciale", *Culture Technique*, 29 (1994). Most of these works however are policy summaries of existing institutional documents. The academics mentioned in the thesis such as Eli Noam and Jacques Pelkmans remain the few major names in this field.

admits:

One reason for such lack of interest [by academics and social scientists in particular] is that the subject of telecommunications seems forbiddingly technological. Actually, most of the issues in telecommunications are quite accessible once they are stripped of needless jargon...¹²

The literature dealing with telecommunications is indeed clouded with overwhelming, technical jargon. Yet, as Noam's comment suggests, once the technical jargon is deciphered, the subject matter is not as complex as it seems, and presents an excellent modern case study for the history of postwar European integration.

In order to contribute to the discipline of history, this thesis translates technical telecommunication data from the engineering domain (which details the history of European telecommunication standardization between the years 1958-1996), and places it within a framework of European integration theory. It may be argued that integration theory in general has not been developed within history; it has generally been associated with the disciplines of political science, economics, business, and international relations. This is unfortunate, because regional integration theory can contribute immensely to the study of postwar European history by providing general models to help analyse and interpret the results of empirical research. The case of telecommunication standardization in Europe between the years 1958-1996 serves to illustrate this point. In essence, the case of telecommunication standardization provides new answers to a recurring question: "is European integration theory still important?"

¹²Eli Noam, *Telecommunications in Europe*, (Oxford University Press, 1992), p. v.

What is Integration Theory? The Core Theories of European Integration

Before explaining the new case of European telecommunications integration, a brief definition of integration theory and an analysis of the core integration theories is necessary. Integration theory, according to Michael Hodges, is concerned with the creation of new types of political, social and economic communities within peaceful settings.¹³ It is concerned with the tasks, transactions, and perceptions of states as they voluntarily merge into regional groupings.¹⁴ The main reason for studying regional integration according to Ernst Haas is because:

The units and actions studied provide a living laboratory for observing the peaceful creation of possible new types of human communities at a very high level of organization and of the processes which may lead to such conditions.¹⁵

Regional integration theory thus helps to make sense of the forces which unite sovereign states into bigger, regional entities.

Modern European integration theory, according to John Pinder, can be traced back to pre-World War II Britain and the theory of economic federalism. Authors such as Harold Laski, Ivor Jennings and Lionel Robbins all believed that the future of Europe lay in an economic federation centred around Britain, France and a democratic Germany. They felt that the unification of these three European powers would eventually ease the central cause of war which, according to Lionel Robbins, was "the anarchic political organisation of the

¹³Michael Hodges, *European Integration*, (Penguin Books, 1972), p. 11.

¹⁴Ernst Haas, "The Study of Regional Integration: Reflections on the Joy and Anguish of Pretheorizing", Leon Lindberg and Stuart A. Scheingold ed., *Regional Integration: Theory and Research*, (Harvard University Press, 1971), pp.6-7.

¹⁵Ernst Haas, "The Study of Regional Integration: Reflection on the Joy and Anguish of Pretheorizing", p. 4.

world."¹⁶

The theory of federalism was subsequently associated with postwar proponents of European integration such as Jean Monnet, Robert Schumann, Paul Henri Spaak, Walter Hallstein, and Altiero Spinelli. Fearing the resurgence of Germany, these federalists emphasized the role of strong institutions and the growth of a federal union among constituent nations as a means to achieve integration.¹⁷ Post-1958 federalism promoted the supremacy of Community Law over national sovereignty and the transfer of decision making powers from national governments to European institutions.¹⁸

The theory of integration also came to include the concept of functionalism, initially through the work of David Mitrany. Mitrany was interested in the specific mechanisms

¹⁶John Pinder in his article "European Community and Nation-State: A Case for a Neo-Federalism?" explains the beginnings of European integration theory in Britain. He uses the above mentioned authors to show that there was an interest in uniting Europe's great powers well before the end of the Second World War. The important titles for each of these authors are: Harold J. Laski, "The Economic Foundation of Peace", in Leonard Woolf, *The Intelligent Man's Way to Prevent War*. (Gollancz, 1933); Lionel Robbins, *The Economic Causes of War*. (Cape, 1939); W. Ivor Jennings, *A Federation for Western Europe*. (Cambridge University Press), 1940.

John Pinder, "European Community and Nation-State: A Case for a Neo-Federalism?", *International Affairs*, 62:1 (1985-6), pp.41-43.

¹⁷Leon N. Lindberg and Stuart A. Scheingold *ed.* *Regional Integration: Theory and Research*. (Harvard University Press, 1971), p. 7.

¹⁸The theory of Federalism can by no means be limited to a few secondary sources. The important primary titles under this theory are: Jean Monnet, *Memoirs*, (London, 1978); Jean Monnet, "A Ferment of Change", in Lawrence B. Krause, *The Common Market: Progress and Controversy*, (Prentice Hall, 1968); F. Duchêne, *Jean Monnet*, (London, 1995); Paul-Henri Spaak, *The Crisis of the Atlantic Alliance*. (Mershon Center Pamphlet Series, No.5, Ohio University Press, 1967); Altiero Spinelli, *The Eurocrats: Conflict and Crisis in the European Community*, (John Hopkins, 1966); Altiero Spinelli, "Growth of the European Movement Since World War II" in C. Grove Haines *ed.* *European Integration*, (Baltimore, 1957).

through which integration might be achieved. He believed that nations could be "joined together through a network of organizations performing specific functional tasks and transcending national boundaries."¹⁹ For Mitrany, functionalism was not merely a concept, but also --and more importantly-- it was an idea for action beyond the limits of the nation state. Its aim was:

...to concentrate sectors of activity under some collective authority and so build up, gradually, the substance of an international society and of international government until at a deeper level the two sides merge to the same ultimate purpose.²⁰

The ultimate purpose of integration for Mitrany was to achieve world peace and global welfare. Functionalism proposed to incorporate both of these goals by promoting international activities that focused on common strengths rather than political or economic weaknesses as the federalists did.²¹

The theory of functionalism gained impetus in the 1960s when it was revised as the theory of neofunctionalism and applied directly to the European Community as a case of

¹⁹Charles Pentland, *International Theory and European Integration*, (The Free Press, 1973), p. 69.

²⁰David Mitrany, "A Political Theory for the New Society", in A.J. R. Groom and Paul Taylor ed. *Functionalism: Theory and Practice in International Relations*, (University of London Press, 1975), p. 32.

²¹David Mitrany, "A Working Peace System: An Argument for the Functional Development of International Organization" in Brent F. Nelsen and Alexander C-G. Stubb, *The European Union: Readings on the Theory and Practice of European Integration*, (Lynne Rienner Publishers, 1994), p. 89. This essay is considered Mitrany's major work on Functionalism. It was published before the end of the Second World War in 1943 as a plea for world peace. The article was eventually republished in 1966. Some of Mitrany's other major works are: *The Progress of International Government*, (London, 1933); *The Problem of International Sanctions*, (Oxford, 1925); *International Security*, (National Peace Council, 1944).

regional integration. The two main works associated with neofunctionalism are Ernst Haas's *Beyond the Nation State* and *The Uniting of Europe*.²² Ernst Haas and his students Leon Lindberg and Stuart A. Scheingold from Stanford University moulded new concepts within the framework of neofunctionalism to describe the integration of the European Community. In particular, neofunctionalism went beyond economic functionalism by including the notion of a political community interested in the welfare of the integrated region:

...[Neofunctionalism] is the process whereby political actors in several distinct national settings are persuaded to shift their loyalties, expectations and political activities toward a new center whose institutions possess or demand jurisdiction over the pre-existing national state.²³

Neofunctionalism held that the carrying out of functionally specific economic tasks would lead to political integration:

Not merely economic tasks, therefore, but the degree of functional specificity of the economic task is causally related to the intensity of integration. The more specific the task, the more likely important progress toward political community.²⁴

The most important effect of functional specificity, according to Haas, was the "spill-over" effect. In this, an economic task inevitably expands as integration progresses and thereby

²²The full references for both of these titles are: Ernst Haas, *Beyond the Nation State: Functionalism and International Organization*, (Stanford University Press, 1968) and Ernst Haas, *The Uniting of Europe*, (Stanford University Press, 1968). These works are not the only ones dedicated to neofunctionalism. Other key works are: Leon N. Lindberg and Stuart A. Scheingold, *Europe's World be Polity: Patterns of Change in the European Community*, (Prentice Hall, 1970); Leon N. Lindberg and Stuart A. Scheingold ed. *Regional Integration: Theory and Research*. (Harvard University Press, 1971); Michael Hodges, "Integration theory" in Trevor Taylor ed. *Approaches and Theory in International Relations*, (Longman, 1978); Charles Pentland, *International Theory and European Integration*, (The Free Press, 1973).

²³Ernst Haas, *The Uniting of Europe*, p. 16.

²⁴Erst Haas, "International Integration: The European and the Universal Process", in Michael Hodges ed. *European Integration Theory*, p. 99.

"spills-over" into other areas of integration, which enlarges the political structure and power of the integrating Community.

Haas's concept of the "inevitable spill-over effect" was a strong factor in the subsequent obsolescence of neofunctionalism as a theory of European integration. Ernst Haas himself publicly criticized his theory of neofunctionalism in 1975 in *The Obsolescence of Regional Integration Theory*.²⁵ In this work, Haas stated that the basic problem with neofunctionalism was that:

...the conceptualization of change seems to be inadequate. In addition, mistakes are made in not properly identifying the spatial focus of the process: efforts at regional integration prove to be far more susceptible to influences exogenous to the system created by the participants than has been allowed. Finally, the doctors err in not appreciating the difficulty of predicting institutional outcomes, in persisting with the application of familiar structural patterns...²⁶

In essence, Haas stated that the European Community had failed to create the foundations needed to achieve "spill-over" into other areas of the Community to make a stronger regional entity. Instead, instances such as the inability to resolve the European energy crisis, to meet the American "R&D challenge", to produce a new generation of sophisticated weapons or even internal issues such as inflation, unemployment, modernizing the agricultural sector without incurring huge subsidies, the joint currency union or even the customs union showed that there wasn't enough joint, functional interest among various political groups to bring these activities and programmes together at a supranational level:

²⁵Ernst Haas, *The Obsolescence of Regional Integration Theory*, (Institute of International Studies, University of California, 1975).

²⁶Ernst Haas, *The Obsolescence of Regional Integration Theory*, p. 5.

These failings have one thing in common: they relate to matters that transcend the space and the jurisdiction of the Community's institutions because they are functions of economic interdependence with trading partners outside of Europe. An attempt to overcome these failings by means of self-contained Community policies—as in the case of the Common Agricultural Policy before 1973—would incur integration costs which some of the Member States are unwilling to shoulder because of economic benefits now accruing from transactions with nonmembers which they would have to forego.²⁷

Haas' final comment on the state of integration theory was that although it might be obsolete for Western Europe, it was still workable as a framework of analysis for other regional groupings including LAFTA, COMECON, the Andean Common Market and the Caribbean Free Trade Association.²⁸

The New Theories of Regional Integration and Neofunctionalism Reconsidered

From the late 1970s onwards a major trend emerged in European integration theory which centred on examining the Community in relation to its international setting. Authors such as Robert Keohane, Joseph Nye and Stanley Hoffman, for example, analysed the European Community in terms of an international regime. Stanley Hoffman in particular examined the European Community and the process of integration in terms of joint actions between economic regions and interdependent linkages among different international actors.²⁹

²⁷Ernst Haas, *The Obsolescence of Regional Integration Theory*, p. 9.

²⁸It is important to note that Haas in his introductory paragraphs firmly stated that regional integration theory was not dead because of Donald Puchala's elephant imagery or similar analogous comments: "On the contrary, these recent comments on the literature about integration theory have all referred to the possibility of improving it." Ernst Haas, *The Obsolescence of Regional Integration Theory*, p. 3.

²⁹Stanley Hoffman, "Reflections on the Nation-State in Western Europe Today", *Journal of Common Market Studies*, 21 (1982), pp. 35-37.

Other authors such as David Mutimer and Jeppe Tranholm-Mikkelsen re-evaluated neofunctionalism and found new instances of "spill over" in the 1980s and early 1990s to suit a more integrated and stronger European Community. David Mutimer in his article "1992 and the Political Integration of Europe: Neofunctionalism Reconsidered" examined the future governing arrangement of a post-1992 European economy. In particular, he re-evaluated the theory of neofunctionalism and found that not only had integration been achieved throughout the history of the European Community, but that there were many examples where one integrated sector had "spilled-over" into another.³⁰ Jeppe Tranholm-Mikkelsen also re-evaluated neofunctionalism and found that the theory was applicable to the Community during the 1980s and the post 1992 Maastricht period. Moreover, he took Mutimer's argument regarding modern "spill over" one step further by saying that business was the driving force behind integration, and that the European Commission all along was "continuously engaged in attempts to cultivate both functional and political spill over."³¹ This framework of renewed neofunctionalism according to Tranholm Mikkelsen, however, was not enough to understand the modern process of integration. This renewed framework needed to be combined with the international interdependence theories of Keohane, Nye and Hoffman in order to understand the full dynamics behind European integration.

³⁰David Mutimer presents a few other examples of modern "spill over". These include the removal of border controls (it spill over into integrated trade and immigration policy and centralized trade and border maintenance), the free movement of goods (this spilled over into taxation with the creation of the VAT and other fiscal policies) and the European Central Bank (it created a central authority which over-rode national sovereignty and created a financial High Authority). David Mutimer, "1992 and the Political Integration of Europe: Neofunctionalism Reconsidered", *Journal of European Integration*, 13:1 (1989), pp. 86-93.

³¹Jeppe Tranholm-Mikkelsen, "Neo-Functionalism: Obstinate or Obsolete? A Reappraisal in the Light of the New Dynamism of the EC", *Millennium*, 20:1 (1991), p. 15.

The Case of Telecommunications Standardization and Integration Theory

Two more authors revised the tenets of integration theory and applied them directly to the field of European telecommunications and international interdependence. William Wallace and Wayne Sandholtz re-evaluated the driving forces behind European integration and came up with a new view of regional integration. William Wallace in his book *Regional Integration: The West European Experience*³² examined the recent explosion in communication technologies and concluded that it was pushing Europe toward greater integration:

Intensive patterns of interdependence that grew up within the institutional framework established under the original treaties, intensified further by technological and industrial changes in the 1970s and 1980s and above all by the revolution in communications, have pushed government into new fields of cooperation, regulation, and common policies.³³

The dynamic evolution of communications technology now measured world politics according to international interdependence and diminished national autonomy. Moreover, this new international, economically interdependent world showed many instances of cross-border spill-overs. In the case of communications technology, the most important spill-over which Wallace analysed was that of knowledge and information. Quite generally, he stated:

As separation fences have been lowered and technological innovations have shrunk economic distances, a multitude of formerly neglected differences among nations' domestic policies have become exposed to international scrutiny.³⁴

One of these "neglected differences among nations' domestic policies that has become

³²William Wallace, *Regional Integration: The West European Experience*, (The Brookings Institute, 1994).

³³William Wallace, *Regional Integration: The West European Experience*, p. 61.

³⁴William Wallace, *Regional Integration: The West European Experience*, p. xix.

exposed to international scrutiny" is the problem of European telecommunication standards. Wallace does not discuss the problem of European telecommunications standards. Instead, he uses this example to prove his idea of "spill over". Knowledge has travelled across borders, and international actors such as GATT, the Americans and the Japanese, are more conscious of power and how it is used against the forces of globalization. Thus the integration of European telecommunications in general, and the eventual harmonisation of the industry is the result of a "spill over" which functions best in an international interdependent setting. This interpretation of "spill over" may be somewhat different from Haas's concept, yet it is still relevant to the overall importance of European telecommunication standardization, and its evolution in an increasing global economic setting whereby international actors interact more frequently.

Wayne Sandholtz in his article "Institutions and Collective Action: The New Telecommunications in Western Europe" takes the integration argument a bit further by specifically focussing on the process of integration in the European telecommunications industry, including the problem of standards. Essentially, Sandholtz shows that the European Commission was the regional and international champion of action in the global telecommunications industry:

The European Commission...initiated preparations for a Europe-wide next-generation infrastructure, pushed for open markets in equipment and services, and led the way in the creation of new institutional arrangements for the joint management of standardization and planning. Though the reform process is not yet concluded, the changes are already substantial enough to declare them a major political achievement by the Commission.³⁵

³⁵Wayne Sandholtz, "Institutions and Collective Action: The New Telecommunications in Western Europe", *World Politics*, 45:2 (1993), pp. 242-243.

Drawing upon the integration theories of Haas and Keohane, Sandholtz argues that in order to achieve integration, strong leadership is a prerequisite for action.³⁶ Sandholtz also states that the process of European integration in telecommunications was not "an automatic, market driven process"; telecommunications integration required "collective political action on behalf of the European Commission."³⁷ He emphasized that the European Commission played a strong international role in mobilizing the process of integration within the European telecommunications industry and making it a successful endeavour.³⁸

The ideas of Sandholtz, Wallace, Nye, Keohane, Mutimer, and Tranholm-Mikkelsen applied to the integration of the European telecommunications industry present a new vision of modern integration theory which is incorporated in the subject matter of this thesis. Throughout this thesis, I will show that since the 1970s, the European Community has been conscious of and conditioned by the demands of international economic interdependence as stated by Wallace, Hoffman, Nye and Keohane. These demands have made themselves felt both through the growth of international markets and multinational enterprises, through institutions such as the General Agreement on Tariffs and Trade (GATT), and through other international players such as the American and the Japanese. All strongly influenced the integration of the European telecommunications industry, and its eventual role in global economic interdependence. This will be proven in chapters 2 and 3 of the thesis.

³⁶Wayne Sandholtz, "Institutions and Collective Action: The New Telecommunications in Western Europe", p. 249.

³⁷Wayne Sandholtz, "Institutions and Collective Action: The New Telecommunications in Western Europe", p. 254.

³⁸Wayne Sandholtz, "Institutions and Collective Action: The New Telecommunications in Western Europe", p. 270.

Furthermore, following the arguments of Sandholtz, this thesis will show that through the leadership and institutional action of the European Commission, the successful integration of the European telecommunications industry was possible. This will be most obvious in chapter 3 with the Commission's "New Approach" to technical standardization.

This thesis however will go beyond Sandholtz by focussing directly on the case of European telecommunication standards for the terminal equipment, and how the Commission played a strong role in standardization between the years 1958 to 1996. Unlike Sandholtz, Wallace, Nye and Keohane, this thesis will give both the theoretical and practical results of the Commission's drive to change European telecommunications and how it was affected by global interdependence. This particular angle of integration, including both the detailed analysis of European legislation dealing with telecommunication standardization and the specific focus on terminal equipment standards, has not yet been examined by Sandholtz or others. Thus, the domain of European telecommunication standardization represents fresh territory through which to explore European integration and integration theory.

Chapter 2:

1958- 1983: The Problem with European Telecom Standards

Telecommunications, telecommunication standards and Non-Tariff Barriers

The Commission of the European Communities (European Commission) has identified the telecommunications industry as a key sector for the future "Information Society". The Commission believes that a technologically advanced, Europe-wide, and low-cost telecommunications network is essential to improve the competitiveness of the European economy, to achieve the internal market, and to strengthen Community cohesion.¹ This belief is based not only on the importance of telecommunications for sectors as diverse as finance, transport, and tourism, but also on their importance as an engine of growth. It has been estimated that by the end of the century, telecommunications will account for more than 7% of the European Community's (EC) gross domestic product. More than 60% of Community employment will depend, to an important degree, on telecommunications by the year 2000.² Equally significant, telecommunications already accounted for over 50% of the total world market for management and transmission of information in the mid-1980s, a market that also includes information technology, consumer electronics, television, and electronic components. (Please see Annex 2).

¹*Green Paper on the Development of the Common Market for Telecommunications Services and Equipment.* COM(87)290, 30 June 1987.

²*European File 15/88- Telecommunications: The New Highways for the Single European Market.* (European Commission: October 1988), p. 4; "Towards a Competitive Community-wide telecommunications market in 1992", *Communication from the Commission implementing the Green Paper on the development of the Common Market for telecommunications services and equipment*, COM(88) 48 final, p. 6.

The European Community has also identified standardization within the telecommunications industry as "an indispensable prerequisite for the creation of a Common Market."³ Standards reduce complexity and variety in telecommunication products. They do this by establishing the necessary requirements and tests which ensure that different pieces of equipment are technically compatible and able to communicate between each other. Standards also allow for interconnection and interoperability among different types of equipment, systems and applications.⁴ Standardization basically ensures mass-interconnection and interworking among telecommunications users and operators by establishing the requirements by which all pieces of equipment can be compatible and communicate efficiently.⁵

³This phrase was taken directly from: George K. Symeonidis, "European Telecommunications Environment in the 1990s" in *Telecommunications Policy* 14(1990), p. 452. Some of the main European Commission documents which also emphasize the need for standardization are: Wilhem F. Pfau and Antoine Thiard, *Research & Development and Standardization*, (European Commission and EFTA, 1992); 84/549/EEC; 86/546/EEC; COM(87)290; COM(88)712; COM(90)456. The secondary literature in *Culture Technique's* Special Edition on Standardization focuses on the importance of this process for the creation of the Common Market: Pierre Durand, "Normalisation et stratégie" in *Culture Technique: Edition Spéciale- La normalisation technique*. 29(1994).

⁴"Telecommunication Standards A New Dimension for International Business", *ICC Policy Statements on Telecommunications- Position Paper 9*, (International Chamber of Commerce, 1986), pp. 4-6.

⁵Stanley Besen offers a more simplified view of how standards interact: "One way to think of standards is in terms of technologies. In this view, two types of equipment are standardized if they can communicate with one another, or if they can both be employed with the same complementary inputs. An alternative view is that standards are documents that specify the approved ways of accomplishing a particular set of tasks. In this view, two pieces of equipment may both meet a standard, yet they may still be unable to communicate with one another if they have chosen different ways of achieving particular ends. Stanley Besen, "The European Telecommunications Standards Institute: A Preliminary Analysis", in *Telecommunications Policy*, 14 (1990), p.527.

In the case of the European Community, however, what is crucial is not merely the establishment of standardization within the telecommunications industry, but the establishment of harmonised standards (i.e. pan-European standards).⁶ With European harmonised standards, Community manufacturers of telecommunications equipment are able to test to one Europe-wide standard, instead of a dozen or more incompatible national standards. Testing equipment to one pan-European harmonised standard ensures that telecommunication equipment used by the Member States can interconnect and function properly throughout the European Community, without causing any exchange problems, or worse, damaging the telecommunications network, end-users, and their equipment.⁷ Harmonised standardization thus ensures compatibility, intercommunication and interworking among the users and the operators throughout the EEC. Moreover, uniformity in more sophisticated systems also promotes greater industry stability, increased compatibility, and portability between different hardware and software equipment.⁸ It also attracts trade to the European Community by

⁶This importance will be proven throughout the thesis in the following pieces of EC legislation: 73/23/EEC, 86/361/EEC, 89/336/EEC, 91/263/EEC, 93/68/EEC and the 1990 Green Paper *Development of European Standardization: Action for Faster Technological Integration in Europe*, Brussels, 8 October 1990, COM(90), 456 final.

⁷"What are standards for?", *The Community Telecommunications Policy*. (European Commission- DG XIII, 1995), Information Sheet 13, p. 1.

⁸Eli Noam in his book *Telecommunications in Europe* briefly describes the advantages and disadvantages of "technical interconnectivity and protection of a balance between standardization and diversity." His analysis stresses the importance of standards, uniformity and harmonisation. He does however suggest that the primary disadvantage of standardization and harmonisation may involve "reduced freedom to innovate and experiment, and the loss of flexibility to adopt to changing conditions." Eli Noam thus states that in order for uniform standards to be a positive influence on telecommunication and technology in general, what is needed is a process to weigh and balance the various needs and ends of standards. Regulatory bodies or institutions such as the European Telecommunications Standards Institute (ETSI) are a good means of containing a balance within a given region

allowing foreign telecommunication equipment companies to test to a pan-European harmonised standard. In the end, open trade and harmonised standards make equipment requirements more accessible, consistent and less costly. Harmonisation helps to pave the road to a successful pan-European market receptive to international competition.

Non-harmonised or differing telecommunication standards create incompatibility between different types of equipment. They also act as non-tariff, technical barriers to trade by stopping the free circulation of goods across the European Community:

Different national production standards and regulations mean that a host of nearly identical products are manufactured separately so as to meet the standards of each individual country... the fact is, that they [standards] can often act as a disguised form of national protection against similar goods imported from other Member States where different standards apply.⁹

If each piece of telecommunications equipment must be tested according to a different Member State standard,¹⁰ using Member State laboratories which follow different regulations, trade becomes hampered by a complex myriad of conflicting approvals requirements. To gain a final approval of a piece of equipment needed for a particular service, a manufacturer must tackle possibly twelve different sets of standards and technical regulations, including certification processes. The end result is that different standards hamper the interoperability and interconnection of telecoms equipment and services within the European Community, making European trade difficult, time consuming, and external trade extremely costly.

such as the EC. Eli Noam. *Telecommunications in Europe*. (Oxford University Press, 1992), pp. 425-426.

⁹*Standardization in the European Market: Eliminating Technical Barriers to Trade By Adopting Common Standards*. (European Commission Newsletter: April 1993), p. 1.

¹⁰The term "Member State" commonly refers to the member countries or European countries belonging to the European Community.

Non-harmonised telecommunications standards also stifle the potential for economic exchange by creating higher costs for the approvals of telecoms equipment. When a single piece of equipment has to be approved twelve different times according to twelve different technical regulations and tested to twelve different standards, it creates much higher costs for the approval and eventual export of telecoms equipment to the EC. It has been estimated that a small or medium sized company may spend approximately \$40 000 Cdn. per equipment and per country to gain approvals within Europe.¹¹ Furthermore, according to Andrew Macpherson:

...technical barriers created by different national product regulations and standards not only add extra costs, but also distort production patterns by raising inventory holding costs, discouraging business cooperation, and preventing corporations from benefiting from the economies of scale that a larger, unified European market can offer.¹²

The final picture that emerges from this scenario of a non-harmonised Europe is a telecommunications industry deeply fragmented by a glut of different national technical standards which require needless, expensive technological duplication, inhibit interconnection, and create non-tariff barriers to both European internal and external trade.

¹¹This estimate is based on an interview with Chris Albinson, Director of Government Relations with Newbridge Networks of Canada. He explained that non-tariff barriers in the form of standards created "another hurdle which Canadian exporters must jump in order to gain access to the European market." It would cost a total of \$30 million to certify Newbridge telecom products for sale into Europe because of extra testing and certification procedures needed to export to the various Member States.

European Integration: The Implications for Canada- Report of the Standing Senate Committee on Foreign Affairs. (The Senate of Canada, July 1996), p. 27.

¹²Andrew Macpherson, *International Telecommunications Standards Organizations*, p.197.

EC goals for standardization and the un-Common Market

A Common Market based on harmonised standards became a formal goal of EC planners in the 1970s. In 1973, for example, the European Commission first introduced harmonisation policies for electric and electronic equipment standards with directive 73/23/EEC.¹³ The Commission pursued more vigorous policies of harmonisation for technical standards in 1985 with the "New Approach" programme to technical standardization and harmonisation.¹⁴ Beyond these two examples of standardization, however, the European Community between the years 1958- 1983 was a non-entity with regards to telecommunication standards. Differing technical standards impeded the free circulation of goods and services across the EC. There were two major problems at hand: the "PTTs", and the legislation in the European Economic Community Treaty (EEC Treaty).

A Problem: PTTs and national monopolies

One of the problems behind Europe's un-Common Market was the highly monopolistic Member State "Post, Telegraph and Telecommunication (PTT)" system. For many years, Member States ran a government monopoly on telecommunications equipment and services using the PTTs. These government PTTs were both the network operators and private equipment suppliers for national telecommunications. The system was profitable for

¹³Due to the importance of this directive, it will be analysed in detail in Chapter 4.

¹⁴The "New Approach" policies include almost a decade of legislation geared to harmonised European telecommunications equipment and services for the 1992 deadline. Some of these policies include: 83/189/EEC, 86/361/EEC, 87/95/EEC, 89/336/EEC, 91/263/EEC, 93/68/EEC. All of these will be explained in detail in the next chapter on the "New Approach" to harmonisation and standardization.

insiders although plagued by inefficiencies.¹⁵ The PTT markets were almost always protected from foreign competition with pro-domestic policies using archaic telecommunication systems. According to Sir Keith Joseph, Secretary of State for British Industry in the Thatcher government, the British PTT services were "sluggish in connection with innovation and created actual blockages on the private sector enterprise [sic] by providing a parochial market instead of accepting designs to serve world markets."¹⁶ The PTTs were inefficient and had low productivity rates. They were partly to blame for the fragmented, inefficient state of the European telecommunications industry whose individual progress was based on internal domestic needs.¹⁷

The PTTs also set standards for equipment. All pieces of equipment entering a given Member State could only be approved by the PTT. In order for a country such as France to install a piece of equipment in Britain, the British PTT created national standards requirements for safety. This meant that the French manufacturer/supplier of equipment had to re-test the equipment in Britain using British laboratories and British technical personnel. At times, Britain created tests to ensure that their facilities were being used instead of accepting valid French safety standards for equipment. In general, the Member State PTTs disregarded European Community efforts to eliminate technical barriers to trade. According to Wayne Sandholtz, by 1984 all of the EC Member States except for Britain still held strict

¹⁵Eli Noam, *Telecommunications in Europe*, p. 3.

¹⁶Shao hing Tsoi and George Philip, "Regulation and Deregulation of Telecommunications: The Economic and Political Realities. Part II: The United Kingdom and Other West European Countries," *Journal of Information Science*, 14 (1988), p. 266.

¹⁷ Shao Hing Tsoi and George Philip, *Journal of Information Science*, p. 271.

monopolies on telecom equipment and services.¹⁸ These "heavily regulated national fiefdoms"¹⁹ maintained high protectionist barriers in the form of standards claiming that they were necessary for public safety.²⁰

The EEC Treaty: the root problem of the "un-Common Market"

Beyond the nationalist PTT agenda for European telecommunications equipment and services, the root problem for European telecommunication standards remained in the treaty which created the European Community: the Treaty of Rome.²¹ The Treaty of Rome,

¹⁸Wayne Sandholtz in his article "Institutions and Collective Action" presents a table which evaluates the level of regulation in 1984 for telecom networks, services, terminals, standards and tariffs. Except for the UK which had a semi-open telecommunications system, the rest of the nine EC members had tight monopolies on all of these sectors. Sandholtz also gives a more concise example of the problems created by PTT standards monopolies:

"To establish a private line between Italy and the Netherlands in the early 1980s, a user had to deal with every PTT in between, frequently making it a nightmare to trace and correct breakdowns. Equipment and software were incompatible across borders. This meant that many services could not operate properly: packet switched data networks nominally using the X.25 standards could operate at only 4.8 kilobit per second for transborder traffic, compared with 48 kilobit per second domestically. French videotext was incompatible with German, British, and Dutch systems....European businesses reported tremendous difficulties in establishing reliable, modern, efficient telecommunications links across Europe."

Wayne Sandholtz, "Institutions and Collective Action", *World Politics*. 45 (1994), pp. 245-248.

¹⁹Sandholtz, "Institutions and Collective Action", *World Politics*, p. 245.

²⁰The above information was taken from an interview with Rowland Few, Senior Approvals Coordinator for West End Systems Corporation in Canada. He previously worked for Newbridge Networks Ltd. in Maidenhead, England and for Kingston Laboratories in England. April, 1997.

²¹The EEC Treaty is most commonly known as the "Treaty of Rome" because it was signed in Rome in 1957. The original signatories of the Treaty of Rome were: Belgium, West Germany, France, Italy, Luxembourg and The Netherlands. The EEC Treaty combined the old ECSC with EURATOM and the EC. This thesis will not focus on the

through Articles 30 and 36, permitted the Member States and their PTTs to declare technical barriers to trade, and allowed these non tariff barriers to continue across the EEC for decades. By subverting the principal goals set down in the Treaty of Rome, Articles 36 and 100 ironically provided for an eventual "un-Common Market."

The Treaty of Rome: Initial Goals

When the Treaty of Rome was signed in 1957 it embodied a dual goal: to create peaceful regional co-existence and to establish a single European economic market. The EEC Treaty resolved to "establish an ever closer union among the European peoples, ensure by common action the economic and social progress of their countries by eliminating the barriers which divide Europe, remove existing obstacles ensuring balanced trade and fair competition and strengthen the cause of peace and liberty by pooling resources."²² In essence, the six original signatories of the Treaty of Rome wanted peaceful regional co-existence in the shape of an economic union in order to quell the extremist nationalism which had destroyed Europe

political events shaping the evolution of the EC to the larger European Union (EU). For such an analysis please refer to Annex 3 for a brief list of the important milestones and dates in the creation of the Common Market. Further surveys of the history of the European Community are: Archer, C. *The European Community: Structure and Process*. London: Pinter, 1992; Dinan, Desmond. *An Ever Closer Union: An Introduction to the European Community*. Boulder: Lynne Rienner, 1994; Middlemas, Keith. *Orchestrating Europe: The Informal Politics of European Union 1973-1995*. London: Fontana Press, 1995; Lewis, David. *The Road to Europe: History, Institutions and Prospects of European Integration*. New York: Peter Lang, 1993; Tsoukalis, L. ed. "The European Community Past, Present and Future", a special issue of *Journal of Common Market Studies*, 12 (1982).

²²Alan Campbell. "The EEC Treaty", *Common Market Law. Vol.II*, (Longmans, 1968), p. 1. Please note that this thesis shall rely on the HMSO 1967 translation of the Treaty of Rome taken from Alan Campbell's annotated text. The page numbers that are cited are those of the author's book and not those of the original Treaty, but the article citations will be true to the original EEC Treaty text.

during World War II.²³

Almost a decade after the creation of the EC, the Common Market was a non-entity. In 1968, the European Commission reviewed the progress of the EEC and found that there were still many obstacles to intra-Community merchandise trade resulting from technical regulations. These obstacles affected a diverse array of goods such as motor vehicles, agricultural tractors and machinery, crystal glass, measuring instruments, pipe-lines and electrical appliances and machines. With respect to electrical appliances and machines, the Commission identified incompatible technical standards as one of the major problems to intra-Community trade. Furthermore, according to Commission reviews, these technical standards

²³It has been argued that the EEC was more of a political union disguised by economics. According to a footnote in the Senate of Canada Report on the EU, "Mr. Jacques Delors, former President of the Commission, told the Committee in Paris that economic integration has always been used as a back door to achieve the political goal." Other theorists such as Ernst Haas, Leon Lindberg have also restated that the quest to create "an ever closer union" was always a political endeavour and not specifically economic. Legal analysts such as Schwarze, Becker and Pollak also confirm that the Common Market was "supposed to create the economic basis for a further-reaching political integration of Europe." Furthermore, William Wallace in his analysis of European economic integration states that "Integration within Western Europe was also integration into "the West," under American leadership....it was to reshape Western Europe on the American model and to equip it to play a new role in an American-led international community." This thesis acknowledges the importance of politics in the creation of the EEC but shall focus more on the creation of the economic market and the factors leading to the economic integration of the Community: Senate of Canada, *European Integration: The Implications for Canada*, p. 5; Ernst Haas, "International Integration: The European and the Universal Process" in Michael Hodges ed., *European Integration*, pp. 97-99; Leon Lindberg, "Political Integration: Definitions and Hypotheses", in Brent F. Nelsen and Alexander C-G. Stubb, *The European Union*, p. 101; Jürgen Schwarze, Ulrich Becker, Christiana Pollak, *The Implementation of Community Law: Studies in the Legislative and Administrative Policies of the European Community and its Member States*, (Nomos Verlagsgesellschaft: 1994), p. 15; William Wallace, *Regional Integration: The West European Experience*, (The Brookings Institute: 1994), p. 87.

existed due to an even bigger problem which lay in Article 100 of the Treaty of Rome.²⁴

In fact Article 100 was supposed to be a solution to a problem rooted in Article 36, which in turn modified Article 30.²⁵ All three articles dealt directly with harmonisation and freer intra-EC trade and they must be evaluated together as an *ensemble*. Desmond Dinan has aptly characterized the basic relationships among these three articles 30, 36, and 100 with respect to trade barriers:

The use of different standards in each member state for particular products can form technical barriers to trade. Despite a general prohibition on technical barriers in Article 30 of the EEC Treaty, member states frequently abused the escape clause in Article 36 which allowed them to impose their own product standards for reasons of health and safety. Article 100 provides for "approximation" (harmonization) of standards in the event of differences between member states under Article 36.²⁶

Articles 30, 36, 100 of the EEC Treaty

Articles 30 and 36 are part of Chapter 2 of the EEC Treaty which was dedicated to "The Elimination of Quantitative Restrictions as Between Member States". Article 30 called

²⁴These findings were based on a meeting organized by the Commission in Brussels from June 27 to 30, 1966 on standardization in the electrical engineering field - Publication No. 8190/2/1/1967/5. They are part of the proposals in the Commission's 1968 General Programme for the elimination of technical barriers to intra-Community trade.

²⁵It is a very popular conclusion among technical authors such as Macpherson and Wallenstein to blame the creation of technical barriers on Article 100. This view is also shared by the European Commission. However, when examining all three articles, it becomes clear that Articles 30 and 36 are the problem and Article 100 was subsequently enacted as a conciliatory measure.

²⁶Desmond Dinan, *An Ever Closer Union? An Introduction to the European Community*, (Lynne Rienner Publishers: 1994), p.338.

for the elimination of quantitative restrictions prohibiting free trade between Member States.²⁷ Article 36 partly overruled Article 30, however, by allowing Member States to impose restrictions on imports and exports which did not meet national technical regulations, public policy, public morality, safety, health and environmental protection, and "the protection of industrial and commercial property."²⁸ The restrictions mentioned in Article 36 were commonly known as "essential requirements."²⁹

Article 100 was drafted shortly after Articles 30 and 36 and dealt specifically with national differences arising from Article 36. Article 100 established a means to "approximate" or to harmonise differences arising from national "essential requirements" defined under Article 36. Different national standards in the form of "essential requirements" existed in a range of industries and products including food products, motor vehicles, agricultural tractors, measuring instruments, crystal glass, electrical appliances and

²⁷Full citation of Article 30: **"Quantitative restrictions on imports and all measures having equivalent effect, shall, without prejudice to the following provision, be prohibited as between Member States."** Alan Campbell, *EEC Treaty*, p. 23.

²⁸Full citation of Article 36: **"The provisions of Articles 30 to 34 inclusive shall not preclude prohibitions or restrictions on imports, exports or goods in transit justified on the grounds of public morality; public policy; public safety or security; the protection of health and life of humans, animals or plants; the protection of industrial and commercial property. Such prohibitions or restrictions shall not, however, amount to a means of arbitrary discrimination not of disguised restriction on trade between Member States."**

Alan Campbell, *EEC Treaty*, p. 26.

²⁹The term "essential requirements" refers specifically to any restrictions imposed by a Member State as outlined in Article 36 (ie: public safety or security, the protection of health) which created restrictions to trade.

electrical machines.³⁰ Article 100 stated:

The Council shall, by unanimous decision, on a proposal from the Commission, issue directives for the **approximation** of such provisions imposed by **law, regulation and administrative action in Member States** as directly affect the **setting up or operation of the Common Market**. The Assembly and the Economic and Social Committee shall be consulted in the case of directives the implementation of which would involve **amending legislation** in one or more Member States.³¹

Though this article did not speak of standards directly, they are implied under the "law, regulation and administrative action in Member States" which affected the operation of the EEC. Under this article, directives could be created to harmonise national differences that caused barriers to the free circulation of goods across the Common Market. However, to do so required the unanimous consent of all the Member States.

Article 100 alone did not directly cause technical barriers. Instead, Article 100 was supposed to be a solution Article 36, which had opened up a Pandora's Box of exceptions to Article 30. Article 36 in effect destroyed the goals set down in Article 30 to eliminate restrictions to trade. It allowed "essential requirements" to create technical barriers to trade. Article 100 nominally provided for the harmonisation of national differences through European directives but only in the very rare cases when unanimous consent could be achieved. Under these conditions, Article 100 could hardly become a meaningful solution to problems arising from Article 36.

³⁰This list of industries is given in Campbell's annotations under Article 100. Alan Campbell, *Common Market Law*, pp. 91-96.

³¹Alan Campbell, *Common Market Law*, p. 91.

Opinions regarding the EEC legislation

Authors such as Campbell, Macpherson and Dinan evaluated the practical application of Articles 30, 36 and 100 and stated that all three were disastrous. Alan Campbell's analysis of the EEC Treaty evaluated a 1965 Court of Justice case, "Albatros v. Sopéco, (CLMR 159), whereby the Court concluded:

...Articles 30 to 37 did not automatically abrogate all existing restrictions and discrimination at the end of the transitional period and... Member States were under no immediate obligation to rescind such restrictions and discriminations.³²

Campbell's quotation pointed out that Member States were allowed to keep protective restrictions on trade such as technical standards. Campbell further observed that Article 36:

...authorises prohibition on import, export or transit with a view to protecting industrial property in derogation of the provision of Arts. 30 to 34 by which quantitative restrictions on imports and exports are to be eliminated.³³

Although differences arising from Article 36 could be harmonised through Article 100, the process was extremely complex, even when unanimous consent was possible. The harmonised articles contained very detailed technical specifications which were difficult for all of the Member States to implement. Furthermore, there was little interest on behalf of the Member State PTTs to follow Commission legislation. The result as noted by Dinan was that:

...the arduous and politically sensitive process of harmonization led to a huge backlog of cases before the Council of Ministers by the mid-1980s".³⁴

This backlog of legislation was such a problem that the Commission itself in a 1993

³²Alan Campbell, *Common Market Law*, p. 23.

³³Alan Campbell, *Common Market Law*, p. 27.

³⁴Desmond Dinan, *An Ever Closer Union*, p. 338.

publication on the activities of the EU and the free movement of goods stated:

The adoption of Community laws enables the obstacles created by national provisions to be removed by rendering these inapplicable when they clash with Community law. This is, indeed, the only course available when the national provisions are justified by Article 36.... Since the mid-sixties the Community has made considerable efforts in this respect: more than 250 directives on a great variety of subjects have been adopted. Harmonization however was often an extremely arduous process, since the directives incorporated all the technical specifications and required unanimity in the council (Article 100 EEC).³⁵

Given the inherent weaknesses in all three pieces of EEC Treaty legislation, more action was taken by the European Commission to rectify the inherent flaws and the growing national technical differences hampering the process of economic integration.

Commission Directives 70/50/EEC and the "Cassis de Dijon" Case: The ongoing fight against Articles 30 and 36

The European Commission did not sit lame in the face of an increasing non-Europe.³⁶ Though "Europessimism"³⁷ became the coin phrase for the EC between the years 1967 to 1983, the Commission and the Court of Justice did pass legislation to rectify the un-Common Market. Three important directives were passed to regulate the free movement of goods:

³⁵"EN 3.3.1 - Free Movement of Goods", in *Fact Sheets on the European Parliament and the Activities of the European Union*, (European Parliament, 1993), pp. 187-188.

³⁶The term "non-Europe" is often found in official EC documents and refers to the fragmented state of the Community during the 1970s: Herbert Ungerer and Nicholas-Costello, *Telecommunications in Europe*, (European Commission, 1988), p. 33.

³⁷During an interview with the Senate of Canada, Professor Charles Pentland from Queen's University described the post-war history of European integration according to four phases: The Formative Period 1945-1955, The Golden Age 1956-1968, The Era of Europessimism 1967-1983 and The Renaissance Period 1984-1992. During the era of Europessimism, Pentland stated "the period is best summed up by the fashionable phrases of the time- Euro-pessimism and Euro-sclerosis. In fact, "Euro" anything in this period became a term of opprobrium or so it seemed." Senate of Canada, *European Integration*, p. 11.

Commission directive 70/50/EEC abolished quantitative restrictions on imports, the "Cassis de Dijon" Court of Justice case implemented the principle of mutual recognition for products lawfully produced and marketed by Member States, and finally, Commission Directive 73/23/EEC or the "Low Voltage Directive" (LVD) harmonised Member State laws relating to electrical equipment designed for use within certain voltage limits. Due to its importance, Directive 73/23/EEC will be looked at more closely in Chapter 4 of the thesis. Each legislative initiative targeted national protectionist abuse of EEC Treaty legislation, especially abuse brought on by Article 36.

Directive 70/50/EEC³⁸ was one of the first major activities taken by the European Commission in the field of standardization.³⁹ Commission Directive 70/50/EEC focused on obstacles to trade including those created by Article 36. Specifically, Directive 70/50/EEC set out to remove measures which hindered imports by specifying classes of barriers including technical barriers to trade. Differences in pricing, or particular requirements of shape, size, weight, composition, presentation and identification which differed from those laid down for domestic products were strictly prohibited.⁴⁰ In particular, the directive stated:

³⁸*Commission Directive 70/50/EEC of 22 December 1969 based on the provision of Article 33(7), on the abolition of measures which have an effect equivalent to quantitative restrictions on imports and are not covered by other provisions adopted in pursuance of the EEC Treaty*, OJ L 13/29: Jan.19, 1970, in George A. Bermann, Roger J. Goebel, William J. Davey, Eleanor M. Fox ed., *European Community Law: Selected Documents*, (West-Publishing, 1993), pp. 264-267.

It is important to note that this directive is included in a collection of European documents and has been reprinted in its original version. The page numbers are those of the book and not those of the directive.

³⁹Macpherson, *International Telecommunication Standards Organizations*, p. 185.

⁴⁰"Article 2" *70/50/EEC*, Bermann, Goebel, Davey, Fox, *European Community Law*, pp. 265-266.

Member States shall take all necessary steps in respect of products which must be allowed to enjoy free movement pursuant to Articles 9 and 10 of the Treaty to abolish measure having an effect equivalent to **quantitative restrictions** on imports and covered by this Directive.⁴¹

The final article of Directive 70/50/EEC made direct reference to obstacles on imports created by Article 36: "This Directive shall apply without prejudice to the application, in particular, of **Articles 36 and 223**⁴² of the EEC Treaty."⁴³

Mutual recognition was another important step by the Commission in its effort to remove technical barriers to trade. The principle of "mutual recognition" meant that "any product lawfully produced and marketed in one Member State had to... be admitted to the market of any other Member State."⁴⁴ The establishment of this principle of trade involved two steps with two different actors. On February 20, 1979 the Court of Justice made a landmark ruling in a case involving in a case involving the German importation of the French liqueur "Cassis de Dijon". The German national authorities had refused to allow the liqueur to be imported into the country because it did not meet national alcohol content standards. The Court of Justice ruled on behalf of a German importer, however, stating that if the

⁴¹"Article 4", 70/50/EEC in Bermann, Goebel, Davey, Fox, *European Community Law*, p. 267.

⁴²Article 223 is part of "Part Six: General and Final Provisions" in the EEC Treaty. It preserves the sovereign rights in respect of security and defence of the Member States. "Article 223- The EEC Treaty" in Alan Campbell, *Common Market Law*, p. 154.

⁴³"Article 6", 70/50/EEC in Bermann, Goebel, Davey and Fox, *European Community Law*, p. 267.

⁴⁴"Communication from the Commission Concerning the Consequences of the Judgement given by the Court of Justice on 20 February 1979 in Case 120/78 ("Cassis de Dijon"), OJ C 256/2 March 10. 1980 in Bermann, Goebel, Davey, Fox, *European Community Law*, p. 268.

liqueur met French standards, it should be accepted within the German market.⁴⁵ The Court concluded:

...Member States, when drawing up commercial or technical rules liable to affect the free movement of goods, may not take an exclusively national viewpoint and take account only of requirements confined to domestic products. The proper functioning of the common market demands that each Member State also give consideration to the legitimate requirements of the other Member States.⁴⁶

The "Cassis de Dijon" case in essence prohibited "any national measure capable of hindering, directly or indirectly, actually or potentially, intra-Community trade."⁴⁷ In particular, it targeted Member State national differences which overlooked Articles 30 to 36 of the EEC Treaty. For technical standards, the "Cassis de Dijon" case meant that any product or equipment manufactured and tested to certain technical standards in one Member State had to be accepted in another Member State without requiring further national standards testing or approval requirements. The "Cassis de Dijon" case showed clearly that the Court of Justice could provide a strong base of support for the European Commission in its effort to tackle Member State technical barriers to trade.

In theory, the landmark "Cassis de Dijon" Court ruling served two purposes: it reinforced a 1978 Commission plea to remove technical barriers to trade, and it helped the Commission establish a new set of guidelines in 1980 for the free movement of goods within the Community. In a "Communication from the Commission Concerning the Consequences

⁴⁵ Dinan, *An Ever Closer Union*, p. 338

⁴⁶"Communication from the Commission concerning the consequences of the judgment given by the Court of Justice on 20 February 1979 in case 120/78 ("Cassis de Dijon")" in Bermann, Goebel, Davey, Fox, *European Community Law*, p. 269.

⁴⁷"Cassis de Dijon" in Bermann, Goebel, Davey, Fox, *European Community Documents*, p. 268.

of the Judgment Given by the Court of Justice on 20 February 1979 in Case 120/78 ("Cassis de Dijon")", the Commission noted:

The judgment delivered by the Court of Justice on 20 February 1979 in Case 120/78...has given the Commission some interpretative guidance enabling it to monitor more strictly the application of the Treaty rules on the free movement of goods, particularly Articles 30 to 36 of the EEC Treaty.⁴⁸

It then ruled:

The Commission will therefore have to tackle a whole body of commercial rules which lay down that products manufactured and marketed in one Member State, must fulfil technical or qualitative conditions....the Commission is referring in particular to rules covering the composition, designation, presentation and packaging of products as well as rules requiring compliance with certain technical standards.⁴⁹

Finally, the Commission and the Court concluded that future harmonisation undertaken by the Commission would focus on national laws creating barriers to Community trade which could also be monitored by the Court.

Standards Organizations and a New Impetus for Integration

As we have seen, the European Commission was not dormant during the 1970s. Several initiatives were undertaken to solve the problem of an increasing non-Europe and the problems created by Article 36 of the EEC Treaty and the nationalist PTT agendas. Directive 70/50/EEC, once again, promoted the free movement of goods by abolishing the technical barriers to trade that arose when imports were required to meet standards distinct

⁴⁸"Cassis de Dijon" in Bermann, Goebel, Davey, Fox, *European Community Law*, p. 268.

⁴⁹"Cassis de Dijon" in Bermann, Goebel, Davey, Fox, *European Community Law*, p. 269.

from those required for analogous domestic products. Subsequently, the "Cassis de Dijon" Court of Justice ruling supported the mutual recognition of Member State production standards.⁵⁰ In practice, all pieces of equipment which met legal requirements in one Member State had to be accepted in another without any further standards testing or approval certification.

Legislation, however, was not the only option for the European Commission; European-wide standards institutions were also created to help coordinate and reduce the number of national standards creating obstacles to trade. The Pan-European Committee for Electrotechnical Standardization (CENELEC)⁵¹ was founded in 1958 as an association of the national standards bodies in the countries belonging to the European Community and the European Free Trade Area (EFTA).⁵² The Pan-European Committee for Standardization (CEN),⁵³ founded a few years later in 1961, also took care of standardization for the EC and EFTA.⁵⁴ The Conference of European Postal and Telecommunications Administrations

⁵⁰The principle of mutual recognition was re-enforced in later Court rulings against German regulations on the composition of beer (1987), Italian regulations on pasta (1988), German restrictions on imports of sausages made from soy protein (1990), and Italian marketing regulations on the minimum fat content of cheese (October 1990). *Europe 1992: Report of the Working Group on Standards, Testing and Certification*, (Department of External Affairs and International Trade Canada, January 1991), p. 10.

⁵¹CENELEC is the French acronym for: Comité européen de normalisation électrotechnique.

⁵²Gerd Wallenstein, *Setting Global Telecommunication Standards: The Snakes, The Players & The Process*, (Artech House: 1990), p. 54.

⁵³CEN is a French acronym for: Comité européen de normalisation.

⁵⁴Gerd Wallenstein, *Setting Global Telecommunication Standards*, p. 57.

(CEPT),⁵⁵ which brought together representatives from the administrations of 26 West European States, also participated in standardization. CEPT was an independent political and economic organization created in Switzerland in 1959 by Member State Posts, Telegraphs and Telecommunications Organizations (PTTs). The main objective of CEPT was to harmonise and improve the coordination of postal and telecom services among European countries to form a homogeneous, coherent and efficient unit on a continental scale.⁵⁶

The harmonised standards created by these new institutions from the late 1960s to the early 1980s, were not enough to solve the European "un-Common Market", however. According to official Community documents, these standardization activities did not effectively counteract the fragmented state of the European market:

In the first twenty years the output of these European organizations was low. CEN adopted 96 European standards between 1961 and 1982; CENELEC adopted in the same period 37 European standards and 303 harmonised documents (Texts which while containing common elements, allow for national deviations on a permanent or temporary basis). An important distinguishing feature of both organizations, however, was that their decisions on common European standards, once adopted, became binding on those member which had voted for them. Outside the limited area covered by common standardization work, national standardization bodies continued to develop their own standards independently.⁵⁷

Moreover, officials of the standards organizations such as Secretary General Repussard of CEN, admitted that before the 1980s, Europe was not fully committed to standardization:

⁵⁵CEPT is another French acronym for: Conférence européenne des administrations des postes et des télécommunications.

⁵⁶Andrew Macpherson, *European Telecommunications Standards Organizations*, p. 192.

⁵⁷"CEN and CENELEC- Establishment and early development", *1990 Green Paper*, p. 12.

On the one hand European public authorities tended often to monopolize...technical product specifications in an attempt to harmonise through the Treaty of Rome all technical matters that appeared to be causing trade barriers; on the other hand European industry was quite happy to live with national standards.⁵⁸

Technical standards were still acting massively as barriers to trade and there was little innovation and interest among either European private or public authorities to change this. Only in the 1980s did the Community integration and harmonisation process gain the new impetus required to take it beyond the muddle of weak legislation and incompatible national standards agendas that characterized the 1970s.

⁵⁸*CEN- Standards for Access to the European Market: The Technical Programme*, (CEN, 1993), p. 8.

**Chapter 3: Legislation 1983-1993:
"The New Approach"- A Quantum Leap in European Standardization**

In the 1980s, "standardization emerged from being a marginal area of government policy to being a central project within the overall context of EC policy".¹ Beginning in 1983, the European Commission and the European Council began to implement important legislation dedicated to opening up the technical process behind standardization, to gathering and disseminating more information on national standards legislation, and to harmonising Community standards. The key turning point in this new trend occurred in 1985, when the Commission officially proposed a "New Approach" to standardization, which was made binding in a Council Resolution of 7 May 1985. The "New Approach" was a set of policy principles designed to overcome the limitations of Articles 36 and 100 of the Treaty of Rome. It established an alternate set of guidelines and procedures that promised to simplify and speed up the standardization process. The "New Approach" sought to make standardization and harmonization fundamental tools in the process of European integration, and its impact was indeed substantial. It ushered in a wave of new standards legislation over the course of

¹This statement is made by Andrew Barry in his article "Technical Harmonisation as a Political Project." The importance of standardization to European integration is also emphasized in the following documents and articles: "Completing the Internal Market", *White Paper from the Commission to the European Council*, June 1985; 1985 Commission White Paper "Completing the Internal Market"; 1987 Green Paper "Towards a Dynamic Economy- the Development of the Common Market for Telecommunications Services and Equipment"; 1990 Green Paper "The Development of European Standardization: Action for Faster Technological Integration in Europe"; *Commission Green Paper*, COM(90) 456 final; Andrew Barry, "Technical Harmonisation as a Political Project", in Gareth Locksley ed. *The Single European Market and The Information and Communication Technologies*, p. 199; Wayne Sandholtz "Institutions and Collective Action: The New Telecommunications in Western Europe", *World Politics*, 1993(45), p.242.

the 1980s, including nearly 40 major decisions concerning standardization in telecommunications (See Annexes 4 and 5.)

In this chapter I first examine why the European Commission and Council were moved to introduce new standardization policies. The analysis shows that international forces, especially as filtered through the GATT Tokyo Round agreements of 1979, were a major impetus behind the Commission's new programme. I then review the major pieces of standards legislation (including those specifically related to telecommunications) that were implemented by the European Commission and the European Council between 1983 and 1990. This legislation includes the "Information Directive" of 1983, the Council Resolution of 12 November 1984 concerning telecommunications harmonisation, the "New Approach", the 1986 Council Decision on standardization in the field of information technology and telecommunications, the 1987 Green Paper, the 1988 European Parliament Session Documents on "A Need to Overcome Fragmentation in Telecommunications", the 1989 Commission Directive "External Aspects of Telecommunications", the related Council Resolution on "Global Conformity Assessment", and the 1990 Green Paper on European Standardization. Finally, the chapter closes with a brief summary of the views of groups both inside and outside the European Community as to the results of the new programme and its level of success, particularly with respect to the telecommunications terminal equipment.

Non-Europe against the world: GATT Standards Code and American market advances

Many international factors contributed to renew the Commission impetus for action. Perhaps most immediately, international standards agreements, notably the "Trade

Agreements Act of 1979" otherwise known as the GATT Tokyo Round "Standards Code", pushed the EC to focus on standards as an important international agenda. The aim of the GATT agreement was:

...to ensure that technical regulations and standards, including packaging, marking and labelling requirements, and methods for certifying conformity with technical regulations and standards do not create unnecessary obstacles to international trade.²

The GATT agreement included four other principles: national standards had to be based on international standards; international standards had to be used if they already existed; nations had to publicize their standards; and nations had to accept each other's test methods and certification criteria.³ In essence, the most powerful industrialized nations agreed in 1979 to encourage international standards, to be aware of technical barriers to trade, to allow fair competition in international trade, and most of all, to open up standards across the globe by giving more information regarding their requirements. For the EC, the GATT "Standards Code" was a clear source of pressure by the international Community to reconsider its own closed standards process and the fragmented state of its non-Europe.⁴

²"Preamble", *General Agreement on Tariffs and Trade: Agreement on Technical Barriers to Trade*- March 29, 1979, p. 4.

³"Article 10: Information about Technical Regulations, Standards and Certification Systems", *General Agreement on Tariffs and Trade: Agreement on Technical Barriers to Trade*- March 29, 1979, p. 17.

⁴There is a lot of discussion among academics regarding the enforcement of the GATT "Standards Code". The greatest benefit of the code according to Robert Middleton was that it encouraged the development of international standards. The greatest weakness was that only national governments signed the code and were left to enforce conflicting private sector activities. Compliance to the agreement seemed to be in question: Robert Middleton, "The GATT Standards Code" in *Journal of World Trade Law*, 14(1980), pp. 202, 218-19; Alan

The United States was also an important source of pressure for the Europeans to coordinate their "non-Europe." The Americans directly singled out European technical regulations as a hinderance to global trade. More indirectly, American technological advances were seen by Europeans as a significant threat. According to Schneider, Dang-Nguyen and Werle this was most evident following the wave of de-regulation and liberalization of the telecommunications market in the early 1980s. Europe was threatened when large telecom companies such as AT&T signed joint ventures with European companies including Olivetti and Philips. These authors also suggest that the convergence between communications and information technologies, which led to the diversification of huge American computer multinationals, particularly IBM, into telecommunications, was "in the eyes of EC industrial policy-makers, an alarming development."⁵ Specifically, in the early 1980s IBM diversified into telecommunications by purchasing MCI stock. This contributed to an overall European fear "that US multinationals, in addition to their hegemony in information technology, would also conquer Europe's communications market."⁶ Europeans realised that their technology, especially in computers and electronics, was neither as

O. Skyes, *Product Standards for Internationally Integrated Goods Markets*, (Brookings Institute: 1995), p. 65; Liora Salter, "Do Reforms Make a Difference? Gearing Methodology to Assessments of Standardization Practice" in R. Hawkins, R. Mansell, J. Skea ed. *Standards, Innovation and Competitiveness: The Politics and Economics of Standards in Natural and Technical Environments*, (Edward Elgar: 1995), p. 45. Another well cited reference on the application of the GATT "Standards Code" is J. Nussbaumer, "The GATT Standards Code in Operation", *Journal of World Trade Law* 18(1984), pp.542-52.

⁵ Schneider, Dang-Nguyen and Werle, in *Journal of Common Market Studies*, 32(1994), p. 481.

⁶Schneider, Dang-Nguyen and Werle, *Journal of Common Market Studies* 32(1994), p. 484.

advanced nor as organized as that of other international players. All of these factors, together with old buzz phrases such as the "Technology Gap" and "The American Challenge"⁷ echoed through the hallways at Brussels. All raised a new awareness of the need for strategies to achieve greater integration.⁸

1983: A New Wave of policies starting with the "Information Directive"

In 1983, inspired directly by the 1979 GATT "Standards Code",⁹ the European Council approved the "Information Directive." This "Council Directive 83/189/EEC of 28 March 1983, laying down a procedure for the provision of information in the field of

⁷The term "Technology Gap" is often associated with the OECD study *Gaps in Technology* or most commonly with Servan Schreiber's book *"Le défi américain"* (The American Challenge) published in 1967. According to opening statements of Servan-Schreiber's work; "the third greatest industrial power, just after the United States and Russia, will not be Europe, but *American industry in Europe.*" The book generally discusses the decline of Europe in the face of American technological and organizational advances. J.-J. Servan Schreiber, *The American Challenge*, (Atheneum: 1969), p. 3.

⁸The factors mentioned above are also cited by the OECD in a study on Information Technology standards; direct reference is made to how the process of European integration and its standardization policies were affected by the de-regulation of telecom industries, the convergence between communications and information technologies and the international standardization agreements. "The New Players", *Information Technology Standards: The Economic Dimension*, (OECD: 1991), p. 79. Other articles citing the importance of global factors in European standardization and re-structuring are: Peter Curwen, "Telecommunication in the European Union: Developing the Information Superhighway", *Journal of Common Market Studies*, 1995(33:3), pp.339-342; Shao Hing Tsoi and George Philip, "Regulation and Deregulation of Telecommunications: The Economic and Politics Realities. Part II: The United Kingdom and Other West European Countries. *Journal of Information Science*. 1988(14), pp. 270-272.

⁹The transparency policy in the GATT "Standards Code" can be found in Article 10 "Information About Technical Regulations, Standards and Certification Systems", *GATT Agreement on Technical Barriers to Trade*, March 29, 1979, pp. 17-19.

technical standards regulations,¹⁰ was drafted to give both the legislators and users of EEC standards more detailed information on the standards activities and programmes of each Member State. Henceforth the European authorities had to be advised of new Member State standards being proposed, and whether these national standards conflicted with European harmonised standards. The "Information Directive" (83/189/EEC) forced Member States to notify the Commission in advance of draft standards which created barriers to trade under Article 36, and which had to be harmonised under Article 100:

...it is essential for the Commission to have the necessary information at its disposal before the adoption of technical provisions...all the Member States must also be informed of the technical regulations contemplated by any one Member State...the Commission and the Member States must be allowed sufficient time in which to propose amendments to a contemplated measure, in order to remove or reduce any barriers which it might create to the free movements of goods.¹¹

In addition, 83/189/EEC enforced a "standstill agreement" which enabled the Commission to call a temporary halt on any national standard activity creating new barriers within the Community. The "standstill agreement"¹² permitted the EEC to replace the standard with a

¹⁰"83/189/EEC", *Council Directive of 28 March 1983 laying down a procedure for the provision of information in the field of technical standards and regulations*, OJ L109, Vol.26, 26 April 1983.

Please note that there are no page numbers indicated in the original EC directives. To avoid confusion, this thesis will give precise references by citing article numbers and sections.

¹¹"Preamble", *Council Directive of 28 March 1983 laying down a procedure for the provision of information in the field of technical standards and regulations*, 83/189/EEC, OJ L 109, Vol. 26, 26 April 1983.

¹²The "standstill agreement" is included in Article 9: Items 1,2,3.
 "Without prejudice to paragraph 2, Member States shall postpone the adoption of a draft technical regulation for six months from the date of the notification referred to in Article 8(1) if the Commission or another Member State delivers detailed opinion, within three months of that date, to the effect that the measure envisaged must be amended in order to eliminate or reduce any barriers which it might create to the free movement of goods."

European harmonised standard (EN) unless one could not be agreed upon, in which case the "standstill" ended. By giving more information and more warning time in the case of new technical standards, 83/189/EEC served to "reduce the risk that newly adopted national regulations or standards would hinder the free movement of goods."¹³

The 1983 "Information Directive" (83/189/EEC), was thus a European policy geared at suppressing national restrictions. Straight from the preamble, 83/189/EEC acknowledged that "in practice, national technical standards may have the same effects on the free movement of goods as technical regulations."¹⁴ In other words, differing national standards stemming from Article 36 were held to obstruct the European Market. The "Information Directive" kept the responsibility for implementing standards in the hands of the Member States and their standards institutions (Annex 6 lists the standards institutions of the Member States involved). Yet the Information directive required these institutions to indicate to the Commission as well as to CEN and CENELEC, whether a new standard was being created, whether the standard transposed¹⁵ an existing international or European standard, and if so,

¹³Article 9, Item 1", 83/189/EEC.

¹³Bermann, Goebel, Davey and Fox, *European Community Law*, p. 260.

¹⁴"Preamble", 83/189/EEC.

¹⁵In many cases, European standards "transpose" international standards. This literally means that an international standard is implemented in European law without any changes except for the beginning identifying letters. For example, "EN 60555-2" is a 1986 European standard on electromagnetic compatibility (EMC) for "disturbances in supply systems caused by household appliances and similar electrical equipment." This EN transposes the international standard "IEC 555-2 (1982) edition 1 + Amendment 1 (1985). Likewise, the 1994 European harmonised standard "EN 61000-3-2" transposes "IEC 1000-3-2:1995". EN 61000-3-2 is another EMC standard indicating "Part 3: Limits-Section 2: Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)." The practical standards process will be explained further in the Chapter 4. The

whether the transposed standards included any unique amendments.¹⁶ The Commission and the European standards organizations thus became obligatory collection centres, allowing Member State standards legislation be systematically tracked and compared. To insure that the new system would be put into practice a committee was created to monitor the implementation of the directive's requirements. As a final measure, the Commission demanded that this directive be transposed into national law no later than 12 months following notification of the directive.¹⁷

1984: Harmonisation of telecommunications equipment and services: Council Resolution 84/549/EEC

Approval of telecommunications equipment and harmonisation of services are part and parcel of the process of standardization; standards affect the performance of both. A Council Recommendation of 12 November 1984 "Concerning the implementation of harmonization in the field of telecommunications" (84/549/EEC),¹⁸ promoted the "full potential of

standards are taken from: "Commission Communication in the Framework of the Implementation of "New Approach" Directives", *Council Directive 89/336/EEC of 3 May 1989*; "Commission Communication in the Framework of Council Directive 89/336/EEC as amended by Council Directive 92/31/EEC in relation to the electromagnetic compatibility", *95/C 241/02*.

¹⁶"Article 2, Item 2", *83/189/EEC*.

¹⁷"Article 12", *83/189/EEC*.

¹⁸*Council Recommendation of 12 November 1984 concerning the implementation of harmonization in the field of telecommunications 84/549/EEC*, No. L298/49 November 16, 1984.

telecommunications¹⁹ by gradually introducing harmonised telematic services²⁰ and telecommunications equipment across the Community. In particular, it encouraged the harmonisation of integrated services digital networks (ISDNs) and of new broad band communications services which were left under the responsibility of regional Community standardization institutions including CEPT, CEN, CENELEC and of international organizations such as the ITU and the CCITT.²¹

Much like the "Information Directive", 84/549/EEC left the responsibility for Community harmonisation in the hands of Member State governments and institutions, but with a provision made for oversight by CEPT. Each national telecommunication administration had to consult CEPT before introducing a new service within the Community. Each administration also had to ensure that from 1985 onwards, these services were introduced "on the basis of a common harmonized approach²²" in order to ensure pan-European compatibility of services. The digital and switching equipment which was needed

¹⁹This phrase is taken from the first paragraph of the preamble: "Whereas there is a need to use the full potential of telecommunications in order to assure the economic development of the Community". 84/459/EEC.

²⁰"The word 'telematic' applies to all those services, systems, apparatus and products which are based on the combined use of electronic techniques of information, i.e. digital processing and transmission. The word 'telematic' is a generic term and does not of course refer to a particular commercial product under that name." "Preamble", 84/549/EEC.

²¹84/549/EEC also includes another Council Recommendation "Concerning the first phase of opening up access to public telecommunications Contracts"(84/550/EEC).

²²The full citation for Article 2 is: "ensure that all new services that are introduced from 1985 onwards are introduced on the basis of a common harmonized approach, notably with regards to services between Member States, so that compatible services are offered throughout Europe, taking into account the progress of work in CEPT, CEN/CENELEC, CCITT and ISO". 84/549/EEC

for these services also had to follow European harmonised standards.²³

The 1985 "New Approach" and the White Paper: The Plan for 1992

The 1985 Commission White Paper was "The Plan for 1992". Building on "the lessons from the setbacks and delays of the past,"²⁴ this extensive document presented a programme and a timetable for the achievement of a fully unified internal market by 1992. "The Plan" included three main objectives: to weld together ten, soon to be twelve, individual markets of the Member States into one single market of 320 million people, to assure that the single market would also be an expanding market, and to assure that the market would be flexible so that resources, people, materials, and capital would flow into the areas of greatest economic advantage.²⁵ Divided into three broad sections --the removal of physical barriers, the removal of technical barriers and the removal of fiscal barriers-- the "White Paper" also included a programme for Community standardization through the "New Approach".

The "New Approach introduced four new principles to speed up the standardization

²³The full citation of Article 3 is: from 1986 onwards, when they order digital transmission and switching systems that are designed for progressive integration of services, do so taking full account of recognized standards in the Community". 84/549/EEC.

²⁴This phrase is taken from the opening paragraph of the Introduction to the White Paper: "Unifying this market of 320 million presupposes that Member States will agree on the abolition of barriers of all kinds, harmonisation of rules, approximation of legislation and tax structures, strengthening of monetary cooperation and the necessary flanking measures to encourage European firms to work together. It is a goal that is well within our reach provided we draw the lessons from the setbacks and delays of the past. "Introduction, Item 1", *White Paper* June 1985, p. 4.

²⁵"Item 8", *White Paper* June 1985, p. 5.

process. First, legislative harmonisation was limited to the adoption of the "essential safety requirements." Second, technical specifications were drawn up by Community standards organizations including CEN and CENELEC. Third, all new standards remained voluntary.²⁶ Finally, national authorities were obliged to recognise all equipment manufactured and tested according to the harmonised standards following the "essential requirements" laid down in Community Directives without any additional national requirements.

If the "New Approach" was the decisive "leap" for Community standardization, it was also the bridge that brought "the lessons from the setbacks and delays of the past" into the present. In essence, the "New Approach,"²⁷ as explained in the White Paper, pointed out the

²⁶It may seem curious that technical specifications are voluntary- in the last principle, it further explains in brackets: "This signifies that the producer has the choice of not manufacturing in conformity with the standards but that in this event he has an **obligation to prove that his products conform to the essential requirements of the Directive.**" "Annex II: Guidelines for a New Approach to Technical Harmonization and Standards," *Council Resolution of 7 May 1985 on a new approach to technical harmonization and standards*, 85/C 136/02,3. Jacques Pelkmans in his analysis of the "New Approach" also explains in a footnote that the standards must be voluntary because "the national authorities remain ultimately responsible for the protection of health, etc." Jacques Pelkmans, "The New Approach to Technical Harmonization and Standardization", *Journal of Common Market Studies*. 25 (1987), p.255

²⁷"The New Approach" programme was first published on January the, 1985 in a Commission Communication to the Council and Parliament. It was then formally published in a Council Resolution and included in the 1985 Commission White Paper "Completing the Internal Market": COM(85) 19 final; *Council Resolution of 7 May 1985 on a new approach to technical harmonization and standards*, May 7, 1985, OJ C 136; ; *Completing the Internal Market, White Paper from the Commission to the European Council*, June 1985, pp. 19-21. Numerous Community bulletins have also been published on "The New Approach": "Technical Harmonization and Standards: A New Approach", *Bulletin EC 1-1985*, pp. 14-16; "Standardisation: 1985 Will be Marked by the Beginning of the Final Phase in the Completion of the Internal Market for Industrial Products- There are Serious Gaps in the Application of the EEC Directive on the Notification of Standards", *Europe* No.3999 Friday 4, January 1985; "Standardisation: New European Commission Guidelines for a More Flexible System- EEC Directives will be Limited to Defining Safety Requirements, with

old problems from Articles 30, 36, 100 and proposed a better strategy. For example, Article 100 from the EEC Treaty was difficult to enforce because Member State differences from Article 36 could only be harmonised on a basis of unanimity. The White Paper proposed to overcome this problem by harmonising only the "essential requirements" (and not directives with very detailed technical specifications- refer to Annex 7²⁸). According to the White Paper:

...a number of shortcomings have been recognized in the procedures established for **the implementation of Article 100**. The practice of incorporating **detailed technical specifications in Directives** has given rise to long delays because of the unanimity required...henceforth, in those sectors...legislative harmonization will be confined to **laying down the essential requirements**, conformity with which will entitle a product to free movement within the Community.²⁹

Furthermore, the problem of different national standards stemming from Article 36 was prevented in the "New Approach" on the basis of the "Information Directive" 83/189/EEC. Using the "principle of information", new technical barriers were foreseen because Member States had to notify the Commission and the new standardization authorities (CEN and CENELEC) of their draft national standards:

In order to prevent the erection of new barriers, Directive 83/189/EEC now obliges Member States to notify the Commission in advance of **all draft regulations and standards concerning technical specifications** they intend to introduce on their own territory....This new "information" procedure which came fully into force on 1.1.1985 constitutes a major step forward and has already been successful in preempting a number of potential obstacles to the free movement of goods between

Reference to Standards", *Europe*, No. 4020 Saturday 2 February 1985.

²⁸For a better explanation of the "Old Approach" to standardization versus the "New Approach", please refer to Annex 9.

²⁹"Harmonisation- A New Approach: Items 67-68", *White Paper* , pp.19-20.

Member States.³⁰

With the "Information Directive" another problem was taken care of, namely, which body was responsible for European standardization activities. Under the terms set down by the "New Approach", in conjunction with the "Information Directive", CEN and CENELEC were given European mandates to create the harmonised standards for the Community:

The Commission is taking steps to strengthen the capacity of these European Standards bodies and also, in the telecommunications sector, of CEPT. This is seen not only as a necessary adjunct to the "New Approach", but as an essential ingredient in the **gradual replacement of national standards by European Standards.**³¹

Lastly, to protect the rights of Member States under Articles 30 and 36 of the EEC Treaty, but also to guard against PTT abuse of Article 36, the Commission enforced the application of "mutual recognition" (as introduced in the "Cassis de Dijon" case) to European testing and certification regimes. With mutual recognition of tests and certification at the Community level, duplication of testing procedures across the EEC was avoided:

The net long term effect of adopting and implementing this new strategy (mutual recognition of testing and certification) will be to **reduce the regulatory burden on enterprises wishing to operate on a Community wide basis....enterprises will only have to meet a single set of rules rather than 10 or 12 different sets in order for their products to enjoy free circulation throughout the Community.**³²

The "New Approach" as written in the 1985 White Paper was indeed a bridge from the lessons learned from the past to the solutions to the future. The future was a 1992 Common

³⁰"Preventing Creation of New Obstacles: Items 75-76", *White Paper*, pp. 21-22.

³¹"Harmonisation- a new approach: Items 68-69", *White Paper*, pp. 19-20.

³²"Mutual Recognition: Items 78-79", *White Paper*, p. 22.

Market, even for technical standards.

However innovative, the White paper did have its weaknesses. According to Jacques Pelkmans the most obvious problem was the massive amount of standardization that had to be handled by regional European organizations such as CEN, CENELEC and CEPT which were not equipped to cope:

Fears are widespread that CENELEC and, especially, CEN are insufficiently equipped to support the new approach adequately. This is an extremely serious point.³³

Pelkmans suggested, in fact, that national administrations would also be unable to cope. For a better idea of the complexity of the procedures required to prepare and approve standards at the national and regional levels, Annex 8 indicates the two level procedure for preparing a standard in the Community.³⁴

Standardization through the "New Approach" addressed the fundamental weaknesses of 25 years of Community policies to regulate the free movement of goods within the EEC. It installed measures for systematic provision of standards information by Member States. The "Information Directive", 83/189/EEC, made standardization both open and available to the public instead of only to the backrooms of the PTT administrations. It halted the proliferation of numerous conflicting standards by forcing the Member States to forward their standards programmes in advance to the Commission and to the regional standards organization. The Commission also inaugurated Directive 84/459/EEC which introduced harmonised telecoms equipment and services. Most importantly, the "New Approach" made

³³Jacques Pelkmans, *Journal of Common Market Studies* 25(1987), p. 263.

³⁴The process of preparing and standard and its application will be analysed in the subsequent chapter. Annex 8 gives a brief idea of the procedure involved in preparing a standard.

standardization faster and easier by harmonising the "essential requirements" instead of harmonising long detailed specifications. The "mutual recognition" of testing and certification procedures further streamlined the standardization process.

The 1987 Green Paper: A cornerstone of European telecommunications

The 1987 Green Paper has been called the cornerstone achievement of a European telecommunications policy.³⁵ The Green Paper acknowledged the fundamental importance of the telecommunications sector for the 1992 Common Market. It stressed the convergence of world telecommunications, computing and electronics and how these technological innovations created new services within the EC. All provided a "soaring demand for communications"³⁶ and a new means of access to information sources making telecommunications a vital sector for European global competitiveness.

Most importantly, the Green Paper recognised that the organization of the European telecommunications industry was inadequate. In 1986, the world market for

³⁵ Authors Schneider, Dang-Nguyen and Werle compare the importance of the 1985 White Paper to the 1987 Green Paper. The full citation is: "Much as the internal market White Paper (CEC, 1985) has become the reference text of what is now called 'Europe 1992', the Green Paper is the cornerstone of the achievement of a European telecommunications policy." Schneider, Dang-Nguyen and Werle, *Journal of Common Market Studies*, p. 488.

³⁶In the opening speech of the 1988 International Consultative Forum on the Green Paper, European Commission Vice-President K.H. Narjes described the status of the European Market *vis à vis* world wide changes in information and communication technology (IT). Dr. Narjes stated: "It is clear, as I have said, that the information and communication technology sector is undergoing fundamental changes worldwide. These are partly due to technological development itself: the growing rate of technological innovation, the numerous new means of access to information sources, the soaring demand for communication and the necessity of a larger dimension is clear in view of the growing importance of the multinationals. "International Consultative Forum: Green Paper", *Opening Speech by Dr. K.H. Narjes, Vice-President of the Commission of the European Communities*, Brussels 24-25 February 1988, pp. 4-5.

telecommunications equipment reached 90 billion ECU of which only 17.5 billion ECU came from the EC. World revenue in services in 1985 was almost 300 billion ECU of which the Community represented a mere 62.5 billion ECU. Furthermore, estimates indicated that at the end of the century up to 7% of the Community's GDP would come from telecommunications, but as of 1987 only 2% of the Community's GDP came from that source.³⁷

The Green paper aimed to create a more dynamic European telecommunications industry. It endeavoured to do this by creating a "level playing field" for telecommunications in Europe. This included opening up the terminal equipment market by the end of 1990, creating transparent type-approval procedures for telecommunications equipment, full mutual recognition of approval procedures across the Community, and the gradual liberalization of the market no later than 1989.

The focus of the Green Paper was not specifically on standardization. Instead additional Community legislation such as Council Decision 87/95/EEC "On Standardization in the field of Information Technology and Telecommunications" addressed standardization within the Community. This new directive 87/95/EEC confirmed the economic importance of standardization for the future of high technology within the EC.³⁸ It built on the principles

³⁷These statistics are taken both from the 1987 Green Paper and Vice-President Narjes' speech. There seems to be some inconsistency between both documents in the date of the last figure (ie: 2% GDP). The Green Paper states that "presently" (ie: 1987), telecoms only represented 2% of the Community GDP. Dr. Narjes' speech instead says that in 1984, telecommunications represented 2% of the Community's GDP: *COM(88) 48 final*, p. 6; *Opening Speech by Dr. K.H. Narjes, Vice-President of the CEC- 1988*, p.3.

³⁸ *Council Decision of 22 December 1986 on standardization in the field of information technology and telecommunications, 87/95/EEC, OJ No. L 36/31.*

of the Green Paper and on the "Information Directive", 83/189/EEC to establish a more coherent Community policy for standardizing information technology and telecommunications. Specifically, 87/95/EEC surpassed previous standardization legislation by addressing the new demands for the 1992 Common Market. These included the complexity of the technical specifications and the precision required to ensure compatible systems, the need to ensure rapid publication of standards so that delays would not get overtaken by technological change thus making standards obsolete, the need to encourage the application of international standards, and the economic importance of standardization in information technology and telecommunications.³⁹

The biggest problem addressed by 87/95/EEC was the increasing amount of technical overlap between different fields of telecommunication standardization.⁴⁰ By 1987, with the growing complexity of telecommunications the "Information Directive", 83/189/EEC, no longer contained all the necessary provisions for the implementation of a Community policy on standardization. Thus, 87/95/EEC overcame this problem in telecommunications by creating a Committee called "Senior Officials Group for Telecommunications"(SOGT). This committee assisted the Commission and regional standards organizations in the application of standards and "functional specifications" in telecommunications.⁴¹ In particular, it

³⁹"Preamble", 87/95/EEC.

⁴⁰The full citation is: "Whereas the increasing amount of technical overlap between the different fields of standardization, particularly in the case of information technology and telecommunications, is such as to justify close cooperation between standards institutions, which should collaborate in order to deal with these matters of common interest..."

"Preamble", 87/95/EEC.

⁴¹"Functional Specifications" have been defined as the specification which defines, in the field of telecommunications, the application of one or more open system interconnection

coordinated standards programmes within the EC. The membership of the SOGT comprised representatives appointed by the Member States and a chairman from the Commission.⁴²

In their work, the SOGT, the Commission, and the Member State standards organizations were guided by international standardization. European standards were finally decided according to existing international standards:

...on the **basis of international standardization** activities, the European standards institutions and specialized technical bodies in the information technology and telecommunications sector shall be invited to **establish European standards**....such bodies shall **base their work on international standards**.⁴³

The Commission demanded regular or at least annual verifications of international standards in order to implement compatible regulations within the Community. All of the technical work required to update European standards in telecommunications and information technology was entrusted to the European standards organizations.⁴⁴

The last remaining problem was how to prepare CEN, CENELEC and CEPT for the overwhelming amount of work necessary to harmonise the Internal Market. This problem

standards in support of a specific requirement for communication between information technology systems (standards recommended by such organizations as the "*Comité international télégraphique et téléphonique*"(CCITT) or the CEPT): "Article 1, Item 10", 87/95/EEC. It is important to note that standards for terminal equipment are included in directive 86/361/EEC and are not included in this particular directive. Directive 86/361/EEC is discussed later in the thesis.

⁴²"Article 7", 87/95/EEC.

⁴³"Article 2, Item 2b", 87/95/EEC.

⁴⁴The full citation is: "The Commission, after consulting the Committee provided for in Article 7, shall entrust the technical work to the competent European standards organizations or specialised technical bodies (CEN, CENELEC and CEPT) requesting them, if necessary, to draw up corresponding European standards or functional specifications."

"Article 4, paragraph 2", 87/95/EEC.

was addressed in the 1987 Green Paper by calling for a European Telecommunications Standards Institute (ETSI) for 1988. Among ETSI's mandates was the obligation:

to draft the specifications with the status of standards, with the participation of all interested parties (industry and users), in full alignment with the community principles applicable to technical harmonisation and with adequate links with existing European standardisation bodies.⁴⁵

The new standards organization had three innovative features: ETSI standards would be adopted by majority voting; "Project Teams" from industry would develop the necessary standards; and ETSI's membership would be less restrictive than that of previous organizations.⁴⁶ ETSI's members included the administrations of CEPT countries,⁴⁷ leading European public network operators, manufacturers, users, private service providers and research bodies.⁴⁸ The European Commission and EFTA secretariat had the status of special

⁴⁵"Towards a Competitive Community-wide telecommunications market in 1992: Section IV- Programme for Action", *Communication from the Commission implementing the Green Paper on the development of the common market for telecommunications services and equipment: State of discussion and proposals by the Commission*, COM(88) 48 final, p. 20.

⁴⁶According to the OECD study on "The Impacts of European Integration Efforts- The New Institutional Scene", it explains how the three new ETSI features differ from previous European standardization activities: in the case of majority voting, ETSI allowed minorities more input in the adoption of standards by giving them a vote instead of approving standards by consensus. Secondly, the new ETSI "Project Teams" composed of members from industry and confirmed by the Director of ETSI elaborated standards, instead of relying on individual companies for technical work. Finally, ETSI open membership allowed more participants instead of the traditional telecom administrations and public network operators. "The Impact of European Integration Efforts- The New Institutional Scene", *Information Technology Standards: The Economic Dimension*, (OECD: 1991), p. 83.

⁴⁷The CEPT members included both EC and EFTA countries. Apart from the 12 EC countries, the other members included Austria, Cyprus, Finland, Iceland, Malta, Norway, Sweden, Switzerland and Turkey.

⁴⁸In a footnote, Stanley Besen explains the roles of each ETSI participant: "Manufacturers develop and/or manufacture equipment that is to be connected to a public network, users are entities that use a public network, and private services providers make use

counsellors to produce voluntary European Telecommunication Standards (ETS). These new features provided ETSI with enough steam to press rapidly forward with the adoption of standards, based on advanced technical work, acceptable to many countries, and with delegations representing users, manufacturers, and providers of services.⁴⁹

External Aspects of Telecommunications: The global market and evaluations of its impact on European standardization

International standardization was thus a growing concern for the European authorities. After releasing the 1987 Green Paper and Directive 87/95/EEC on telecommunication standardization, various Community documents were released stressing the importance of world markets for telecommunications and the need for compatible, global standards. For example, the Vice-President of the European Commission stated:

It is obvious that the development of telecommunications in the Community, as mapped out in the Green Paper, **cannot be seen in isolation from what is happening in the sector worldwide.**⁵⁰

Vice-President Narjes stressed that the European Community was committed to the principle of free world trade. Especially during the Uruguay Round of GATT trade talks in the late

of a public network to provide service to third parties." Stanley Besen, "The European Telecommunications Standards Institute" in *Telecommunications Policy* 14(1990), p. 522. Stanley Besen in his article also gives more information on the structure of ETSI, voting procedures and technical mandates. (pp. 521-530)

⁴⁹This last phrase was taken from: *Information Technology Standards*, OECD, p. 83. To give a better idea of ETSI's membership, in 1995 the new standards organization had 347 members, 65 Observers including the administrations of 28 CEPT countries and the leading European public network operators, users, private service providers and research bodies. Frede Ask, "European Telecommunications Standards Institute" in Brian Kahin and Janet Abbate ed. *Standards Policy for Information Infrastructure*, (MIT Press, 1995), p. 405.

⁵⁰"Opening Speech by Dr. K.H. Narjes", *Brussels, 24-25 February 1988*, p.13.

1980s, Narjes suggested that "the question of future regulation of the telecommunications sector is, of course, closely linked to the development of international trade relations."⁵¹

The European Parliament (EP) also issued reports which re-evaluated Community strategies on standardization and the status of European telecommunication manufacturers and equipment. In November 1988, the European Parliament released Session Documents on "The Need to Overcome the Fragmentation of the European Telecommunication Industry".⁵² These documents combined EP motions dealing with telecommunications that had been introduced from 1985 to 1988. In 1985, the European Parliament tabled a motion recognising the fragmented state of the internal market and the handicaps it brought to its international competitiveness:

Whereas the **failure to cooperate within Europe** contains the danger that European producers will seek cooperation one after another **with American or Japanese producers**, which may lead to the disappearance of all independent European producers within a decade...⁵³

The following year, the European Parliament tabled a motion examining mergers between telecommunications companies. In particular, the EP showed some *malaise* regarding American activity in the European market:

⁵¹"Opening Speech by Dr. K.H. Narjes", *Brussels, 24-25 February 1988*, p. 14.

⁵²"Report drawn up on behalf of the Committee on Economic and Monetary Affairs and Industrial Policy on the need to overcome the fragmentation in telecommunications", *European Parliament Session Documents 1988-89*, Series A, 8 November 1988, Document A 2-0252/88.

⁵³"Annex I, Item B, Motion for a Resolution (Doc. B 2-1346/85)", *European Parliament Session documents 1988-89*, p. 9.

The European Parliament considers that a special report should be drawn up on the impact of the presence within this **concentration of American firms whose European subsidiaries do not pursue an independent policy.**⁵⁴

In 1988, the EP tabled a motion combining its earlier suggestions. It demanded that telecommunications equipment markets be opened to ensure Community-wide interoperability. It also proposed that the European Telecommunications Standards Institute become a priority area for ensuring interoperability, open telecom standards across the Community, and international competitiveness:

...considerable importance must be attached to telecommunications standardization, the aims of which, in the short term, must be to secure and consolidate Europe's highly efficient telecommunications sector- and hence the jobs concerned- and to **enable the Community's telecommunications industry to maintain its position in the world in the face of competition from US and Japanese industry...**⁵⁵

The European Parliament further stressed that Community telecommunications equipment manufacturers should evolve into pan-European companies to "compete with their American and Japanese rivals".⁵⁶

The European Parliament documents prepared the way for the 1989 Commission document entitled "External Aspects of Telecommunications".⁵⁷ The "External Aspects of Telecommunications" document focused entirely on bilateral and multilateral relationships affecting the Community. Mostly influenced by the GATT Uruguay Round trade talks, the

⁵⁴"Annex II, Item 3- Motion for a Resolution (Doc.B 2-1328/86), *European Parliament Session Documents 1988-89*, p. 10.

⁵⁵"Motion for a Resolution, Item 17 (EN(88) 1907E)", *European Parliament Session Documents 1988-89*, p. 7.

⁵⁶"Resolution for a Motion, Item 19, (EN(88)1907E)", *European Parliament Session Documents 1988-89*", p. 8.

⁵⁷*External Aspects of Telecommunications*, 29 November 1989, ISEC/B31/89.

EC recognised that this particular multilateral relationship determined the progress of the international market in telecommunication services, standards and market access. Most notably in standards, the Commission stated:

With regard to technical barriers to trade (standards), the Community is seeking to establish a better balance under the GATT agreement by extending its provisions, in particular to the **adoption of international standards and transparency of specifications adopted by sub-national and private standardisation bodies.**⁵⁸

By pushing for a more open standards system the EC in essence, was protecting itself from the risk that its internal decision making process "be determined indirectly by the result of international negotiations."⁵⁹

"The External Aspects of Telecommunications" also acknowledged the importance of bilateral relations to the European Community. Since 1986 for example, the USA and the EC engaged in discussions with the aim of exchanging information and clarifying positions on standardization and telecommunications in general.⁶⁰ A "constructive dialogue" between both sides was the extent of the Euro-American relationship.⁶¹ Additional bilateral relationships were pursued with Japan, Canada and Australia in the area of international

⁵⁸"Item 2.1c, GATT: Telecommunications equipment and services in the Uruguay Round", *External Aspects of Telecommunications*, p.2.

⁵⁹"Item 4. Conclusion", *External Aspects of Telecommunications*, p. 6.

⁶⁰ Much of the EC-USA relationship later in the 1990s was dedicated to signing "Mutual Recognition Agreements" (MRAs) on certification and testing of telecommunications equipment. The MRAs were signed with Canada. These shall be discussed further on the thesis.

⁶¹According to this document, the EC avoided a strict bilateral relationship with the United States and pursued " a constructive dialogue with the United States in telecommunications." Multilateral foras such as the OECD, ITU, GATT were the preferred method of negotiation for telecommunications.

"Conclusion", *External Aspects of Telecommunications*", p. 6.

telecommunications standardization and EC conformance Testing Services. They seemed to be discussions and not concrete negotiations. The most important bilateral partners were the EFTA countries. The EC renewed its mandate to collaborate fully with EFTA in all of its telecommunication activities, especially as they are full members of CEN, CENELEC and CEPT and participate in the implementation of European harmonised standards and regulations.

The final document that stressed the importance of international activities to European standardization and to the future of the Common Market was a Council Resolution outlining a "Global Approach to Conformity Assessment".⁶² This Council Resolution confirmed the importance of a "global approach" in mutually recognising proofs of conformity regarding telecommunications equipment.⁶³ The Council outlined certain guiding principles for its conformity assessment procedures. These included the use of European standards relating to quality assurance EN 29000 and the requirements by the standardization bodies under EN 45000. On the basis of these standards, the European Community promoted Mutual Recognition Agreements with other third countries and most of all, ensured international trade in regulated products.⁶⁴

⁶²*Council Resolution of 21 December 1989 on a Global Approach to Conformity Assessment*, OJ No. 90/C 10/01.

⁶³"Proof of conformity" simply means that countries recognise each others' manufacturer tests and certification procedures/reports for the approval of equipment. For example, when an American piece of telecommunications equipment is exported to the EC, the EC recognises the American "Underwriters laboratory/ American National Standards Institute" (UL/ANSI) stamp and the tests undertaken to prove that this piece of equipment is safe, without requiring any further in-laboratory testing in the EC and vice-versa.

⁶⁴"Adoptions", *Council Resolution of 21 December 1989 on a global approach to conformity assessment*.

The Last Details: 1990 Green Paper and Commission Reports

Less than 900 days from the Community's deadline for achievement of the internal market, European standardization has become central to that objective. Hundreds of European standards are today being drawn up to accompany the Community's technical legislation which will come into force before 1 January 1993. This is the immediate goal of the European standardization process.⁶⁵

In 1990, the race was on to complete the internal market before the end of 1992. The 1990 Green Paper on "The Development of European Standardization: Action for Faster Technology Integration in Europe" was the final step taken by Brussels to meet the 1992 deadline. Again, this document emphasized the problems of the telecommunications industry and the strategic significance of European standardization, both to private and public sector producers and users. Moreover, the Green Paper accelerated the delivery of European standards by expanding the mandates of the regional standardization organizations.⁶⁶

The 1990 Green Paper was divided into two broad sections: "The Challenge" and "Meeting the Challenge". The first section, "The Challenge", reiterated the importance of standardization to the Internal Market by stating that "the main motive for promoting any standardization activity is economic."⁶⁷ According to the document, harmonised European standards reduced costs of equipment, services and, research and, production, and distribution costs for producers. They also eliminated national barriers to trade by building up "a degree

⁶⁵"Executive Summary", *Green Paper on the Development of European Standardization: Action for Faster Technological Integration in Europe*, Brussels, 8 October 1990, COM(90) 456 final, p. 4.

⁶⁶"Objectives of the Green Paper", *1990 Green Paper*, pp. 4-6.

⁶⁷"European Standards in an Integrated Market", *1990 Green Paper*, p. 10.

of commonality in technical specification where the markets considered it useful."⁶⁸

Furthermore, for new information and telecommunications technologies, standards were often a pre-condition for industrial production or marketing. International based standards or at least pan-European standards facilitated the marketing of these products both within and outside of Europe.

The second section of the Green Paper, "Meeting the Challenge", outlined the necessary actors and tasks needed to double the number of standards by the Common Market deadline (1992). European industry, for example, was called upon to plan for Community harmonised standards. In particular, industry was called upon to provide technical experts and other forms of financial support. Industries were also called upon to propose and identify priority areas for standardization by the Community standardization organizations. The committee structure and the number of technical experts of the standardization organizations were also modified to handle a greater number of harmonised standards, and to reduce the time taken to complete and implement Community standards.

Aside from these organizational changes, the Green Paper proposed two new innovations to speed up the establishment of European standardization: the harmonisation of European standards (ENS) and the establishment of a Community testing and certification organization. European standards according to the Commission had to exist "in their own right"--that is, they could not be transposed twice (into European and national law) before being used.⁶⁹ They should be referenced directly into national law using their European

⁶⁸"Section 1: European standards in an integrated market", *1990 Green Paper*, p. 10.

⁶⁹When a European standard is declared in a Commission directive, it has to be implemented at two levels. For example, when the European safety standard EN-60950 was

reference number. A common mark of conformity to European standards replaced national certification marks,⁷⁰ and a single set of European standards was established removing distinctions between ENs (prepared by CEN, CENELEC) and ETSS (prepared by ETSI).⁷¹ With respect to testing and certification, the new organization called into existence the European Organization for Testing and Certification (EOTC) which would take over responsibility for CEN and CENELEC certification agreements.⁷²

Finally, Some Results

Having reviewed almost a decade of European standardization policies from Brussels, the question which must now be examined concerns the success rate of standardization within the EC. Did the legislation help significantly to harmonise European standards? Two case

announced in Commission directive 73/23/EEC, it was transposed into British national law and implemented by the new harmonised standard BS EN 60950. In this case, "BS" represents "British Standard" and literally transposes the European standard into national law without any changes. This process shall be explained further in the thesis.

⁷⁰Previously, when a piece of equipment was tested for safety according to national requirements and standards, it had to be stamped by the manufacturer along with a certification of declaration proving that all requirements were met. The stamp would normally be a national symbol. i.e. in the case of Austria, it is "ÖVE" (Österreichischer Verband Für Elektrotechnik) which is the Austrian national authority for telecommunications. In the New Approach requirements, the European "CE" mark meaning "conformité européenne" is stamped on all pieces of approved equipment across the Community regardless of nationality or national telecommunications authorities. This will be explained in more detail in Chapters 4 and 5.

⁷¹ETSI specializes in telecommunications standards for the ISDN and other terminal equipment standards. It creates European Telecommunication Standards (ETS). CEN and CENELEC take care of most electrical standardization and produce European Normes/Standards (ENs).

⁷²"Status of European standards and Testing and Certification", *1990 Green Paper*, p. 53.

studies of concrete results regarding Member State adoption of European standards will be presented in Chapter 5. Here my aim is to review European documents and other recent analyses of European standardization that give an indication of the overall progress of standardization under the New Approach.

According to an ISDN Progress Report issued on 23rd March, 1990 the European Telecommunications Standards Institute (ETSI) completed more than 60-70% of the work required to harmonise ISDN standards.⁷³ The 1990 Green Paper also confirmed that during the years 1988-1990 ETSI worked on nearly 300 European Telecommunication Standards; 40 of these were adopted in 1990 while a further 260 reached the stage of public enquiry.⁷⁴

In other Canadian and European research documents, miscellaneous results were published regarding the success rate of European standardization. A 1991 Canadian working document on standards stated that most of the directives proposed in the 1985 White Paper on technical barriers to trade had been adopted, and that by March 1990, the European Parliament had reached a consensus on more than 80% of its proposals.⁷⁵ In 1992, the European Commission also issued a Report to the Council and the European Parliament on standardization in the field of information technology and telecommunications. A glance at the report shows that in 1985 only one EN was published. The following year this increased

⁷³Gerhard Fuchs. "Integrated Services Digital Network: The Politics of Telecommunications Network Development," in *Journal of European Integration*. 16 (1992), p. 72.

⁷⁴"ETSI", *1990 Green Paper*, p. 17.

⁷⁵*Europe 1992: Report of the Working Group on Standards, Testing and Certification*, (Canadian Ministry of External Affairs Industrial Trade Policy Division, January 1990), p. 17.

to 4 ENs, and by 1990 there were 21 ENs and ENVs. By 1991, there were 27 ENs and ENVs.⁷⁶

If we compare these results to earlier standardization done before 1983, the change was dramatic. The 1990 Green Paper stated that between the years 1985-1989 the organizational structure of CEN and CENELEC grew: CEN increased from 10 staff members to 70 and CENELEC grew from 13 to 32 staff members. With the growth of the organizational structure, the Green Paper also stated that the number of standards issued by CEN increased seven-fold between 1982-1989, from 19 to 130 standards per year. In CENELEC, the number of standards produced increased six-fold, from 20 to 126. In total 1250 European standardization documents were adopted of which 800 were electrotechnical standards.⁷⁷

The OECD also released some data on the progress of European standardization. A table on "Trends in European Standardization 1987-92" gives figures on the number of standards directives adopted by the European Community. At the end of 1987 only one EC directive made direct reference to standards. The number grew to three standards the following year, to eight in 1989, 14 in 1990 and 18 in 1991. The OECD table also indicated the number of standardization projects in progress at CEN/CENELEC. At the end of 1987, there were 27 projects in progress. In 1988, there were 37 projects, 50 in 1989, 75 in 1990, 100 in 1991 and 140 by the end of 1992. The number of standards issued by CEN was also

⁷⁶*Report on Standardization in the Field of Information Technology and Telecommunications 1990-1991*, SEC(92) 1598, Brussels 2 September 1992, Annex 1.

⁷⁷"Present Structure", *1990 Green Paper*, p. 15. Please refer to footnote 62 on page 42 in Chapter 2 for a comparison of the number of standards produced under the "Old" and "New Approach" to technical standardization.

released. At the end of 1987, 39 CEN standards were issued. This increased to 49 in 1988, 150 in 1989, 350 in 1990, 700 in 1991 and 1 000 at the end of 1992. According to the OECD report, this represented "a remarkable increase in the production of European standards forecast towards 1992."⁷⁸ (Please refer to Annex 9).

In the area of Information Procedures set by Directive 83/189/EEC, more general results were published. The Commission report on "Standardization in the field of Information Technology and Telecommunications" reported that in 1989 there were 319 draft technical regulations circulated by the Member States as compared to 15 in 1988. The Canadian Working Standards stated that the greatest European accomplishment in the early 1990s was the readily accessible monthly information about draft European standards and other European standardization activities by CEN/CENELEC to the Standards Council of Canada and Foreign Affairs in a bulletin entitled "Europe '92 Trade Winds."

All in all, during the years 1983-1992, the European Commission succeeded in making standardization a priority issue for the completion of the Internal Market. The "New Approach" and the creation of ETSI were already sufficient proof of a different attitude towards technical barriers to trade. The European Commission's standardization project, however, was extremely complex and ambitious. It had to coordinate standardization within the EC institutions themselves, deal with the overwhelming demands on standardization by CEN, CENELEC and ETSI and coordinate mutual testing and certification both for the EC Member States and Third Countries such as Canada and the United States. All of these

⁷⁸"Table 4: Trends in European Standardization 1987-92", in *Information Technology Standards*, p. 77.

demands increased the pressure on the Commission to achieve a clear internal market for 1993. The following chapter will give a more practical analysis of European standardization and the level of integration of standardization achieved in each Member State of the European Union.

Chapter 4

Standards Harmonisation for Telecoms Terminal Equipment

Within the EC's numerous activities in the telecommunications sector, progress has been greatest in the area of standards where the EC objective is to achieve legislative harmonization, transparency, and mutual recognition of testing and certification practices. If achieved by the end of 1992, these goals will facilitate the development and marketing of equipment within the EC by European based companies. It is the opinion of the Working Group that although the EC objectives may not be reached by the end of 1992, the movement towards harmonization of standards will be achieved at some point.¹

Transparency, the harmonisation of European telecommunications standards legislation, and mutual recognition of testing and certification practices were achieved after the 1992 deadline. By the end of 1996, the Member States of the European Community managed to harmonise most of the requirements for three different "New Approach" standards directives: 73/23/EEC Low Voltage or Safety, 89/336/EC Electromagnetic Compatibility and 93/68/EEC CE Mark/Amendment directive. These three directives are important to the standardization process of European telecommunications as they list the mandatory harmonised standards needed for the approval of telecommunications terminal equipment² within the European Community.

¹Towards the end of the 1980s, the Canadian Ministry of External Affairs published several reports analysing the success rate of "Europe 1992" and its impact on Canadian industries. This particular report analysed among other things, the European standardization process and the implications for Canadian manufacturers and exporters of information technology hardware and software to the European Union. The above quotation was the opinion of the Canadian government in 1989 regarding the possibility of Community harmonisation. *Europe 1992: Telecommunications and Computers*, (Canadian Ministry of External Affairs Industrial Trade Policy Division, December 1989), p. 4.

²Once again, telecommunications terminal equipment is defined by the European Commission as: "Equipment intended to be connected to the public telecommunications network, for instance, to be connected directly to the termination of a public telecommunications network, or to interwork with a public telecommunications network being connected directly or indirectly in order to send, process or receive information".

"Chapter 1, Article 1" in *Council Directive of 29 April 1991 on the Approximation of the laws of the Member States Concerning Telecommunications Terminal Equipment, including the Mutual Recognition of their Conformity*, 91/263/EEC, OJ No. L 128/1,

This chapter and Chapter 5 examine how the integration of telecommunication standards works in practice. In particular, this chapter examines the process of implementing a standard for telecommunications terminal equipment within Europe. It explains how standards are incorporated at the Community level into Commission directives, and then how these directives are implemented at the national level. To understand this process clearly, this chapter looks at three specific "New Approach" directives: the Low Voltage directive, the Electromagnetic Compatibility directive, and the CE Mark/Amendment directive. Chapter 5 extends this analysis further through a nation by nation analysis of the level of integration achieved for these standards directives as of 1996.

How directives are implemented across the EC³

European standards are implemented using European Community directives which are issued by the European Commission. A directive is an official legal instrument used to harmonise Member State policies and requirements so as to facilitate the movement of goods and people across the Community. "New Approach" legislation such as 83/189/EEC and 87/95/EEC are examples of European Community directives. Directives are issued in the

29 April 1991.

³The process of standards and directives was first explained to me during an interview with Don Moncion, Head of Homologation & Standardization at Newbridge Networks Corporation in Kanata, February 1996. I also interviewed Andy Kwan, Veena Rawat who are engineers specializing telecommunications approvals from the Canadian Ministry of Industry (December 1995), and William Ehrlich and Howard Isaac from the Ministry of Foreign Affairs and International Trade (February 1996). Both Ehrlich and Isaac specialize in legal trade issues between Canada and the EU. All gave some insight on the practical European integration process for telecommunication standards. The information presented in chapters 4 and 5 is also based on my 1996 summer research project for Newbridge Networks both in England and in Canada.

Official Journal of the European Communities.⁴ They are not law however. To become law they must be implemented into national Member State legislation. Specifically, according to Article 189 of the Treaty of Rome:

A directive shall be binding, as to the result to be achieved, upon each Member State to which it is addressed, but shall leave to the national authorities the choice of form and methods.⁵

Thus, when a European directive is issued in the *Official Journal of the European Communities*, the Member States are obliged to transpose the directive into their national law. Only then is a directive legally binding and functional in the Member States of the European Community.

Once an EC directive is transposed into national law, each Member State publishes the new Member State directive in their "Official Journals." For example, in the United Kingdom (UK) European directives are transposed into national legal texts called "Statutory Instruments". Statutory Instruments are the British texts which make the European directive law. In Belgium, the national legal text which transposes EC directives is the "Arrêté-Royal".

⁴The *Official Journal of the European Communities (Official Journal)* is used as the legal mechanism to publish directives and their designated standards.

⁵"Part Five: Institutions of the Community, Title 1, Chapter 2: Provisions common to several institutions, Article 189", *Treaty on the European Union, Together with the Complete Text of the Treaty Establishing the European Economic Community*, OJ 92/C 224/01, 31 August, 1992.

The Low Voltage Directive 73/23/EEC

A more concrete example of national transposition of European directives is provided by the EC Low Voltage directive 73/23/EEC.⁶ The "Low Voltage Directive" was the first EC directive which included the essential product safety requirements and harmonised standards for the free movement of electrical equipment. This directive was the result of the 1968 Commission review on the progress of the EEC. The Commission found that there were too many obstacles to intra-Community merchandise trade resulting from technical regulations. In fact, in the case of electrical equipment, most of the obstacles to free trade concerned low voltage equipment. As a solution to this problem, the Commission decided that:

...preference would be given to **alignment of regulations**...the Community would do no more than lay down a few general **safety principles**, and for the rest refer to the **harmonised standards**...**All electrical appliances which conform to the harmonised standards would then be considered as conforming to the general safety principles and therefore able to move freely within the Community.**⁷

Hence the "Low Voltage" Directive was created to harmonise the main safety principles within certain voltage limits necessary to circulate electrical equipment across the community.

The "Low Voltage Directive" applied to all electrical equipment, including domestic,

⁶The full title of EC directive 73/23/EEC is *Council Directive of 29 February 1973 on the Harmonization of the Laws of Member States Relating to Electrical Equipment Designed for Use Within Certain Voltage Limits*. OJ No. L 77/29 on 26th March, 1973.

⁷Most of the suggestions on the standardization of electrical engineering were part of the proposals in the Commission's 1968 General Programme for the elimination of technical barriers to intra-Community trade. This quotation was taken from a large footnote in Alan Campbell's work *Common Market Law*, which includes the 1968 Commission ruling on the removal of technical barriers to trade. Campbell, *Common Market Law*, pp. 95-96. This whole situation relates back to the abuse of Article 36 as discussed in Chapter 2 of this thesis.

professional and industrial products. It covered consumer goods and electrical/electronic equipment designed to operate at a nominal voltage between 50 V and 1000 V for alternating current (AC) and 75 V and 1 500 V for direct current (DC).⁸

The general safety of electrical equipment under 73/23/EEC was guaranteed by two major principles included in the harmonised standards. First, the equipment had to be designed and manufactured to protect against a user's direct or indirect contact with the equipment, and second, the equipment had to be protected from hazards caused by external influences including mechanical requirements and non-mechanical influences in expected environmental conditions or in conditions of overload.⁹ To ensure conformance with these principles, some of the electrical safety tests needed under each harmonised safety standard included: checking technical, material and operational parameters and limits appropriate to the category of equipment covered, typically through earth bond testing, insulation testing, high-voltage testing, residual voltage testing, earth leakage current testing, and earth leakage differential.¹⁰ These tests and others necessary for each safety standard insured that electrical equipment was constructed "in accordance with good engineering practice in safety matters in force in the Community, and [did] not endanger the safety of persons, domestic animals or property when properly installed and maintained and used in applications for which it was made."¹¹

⁸"Article 1", 73/23/EEC.

⁹"Annex 1", 73/23/EEC.

¹⁰Rod Taylor, "The Low Voltage Directive Explained", in *Compliance Engineering*, 14 (1997), p. 50.

¹¹"Article 2, Part 1", 73/23/EEC.

Over the last twenty five years, many safety standards have been designated under the Low Voltage Directive. Examples of the types of European harmonised safety standards under the Low Voltage directive are: EN 41003 "Particular safety requirements for equipment to be connected to telecommunication networks", EN 60950 "Safety of Information technology equipment including electrical business equipment", EN 60825 "Radiation safety of laser products, equipment classification, requirements and user's guide" and EN 60825-2 "Safety of laser products, Part: 2 Safety of optical fibre communication systems".¹² Some of these standards are indicated in Annex #10. It is important to note that, according to the requirements of 73/23/EEC, once the manufacturer has tested the equipment and ensured that designated safety standards are met, it must mark the piece of equipment with the manufacturer name or trade mark and present a declaration of conformity to prove that the equipment conforms to harmonised safety standards required under 73/23/EEC.¹³

The Implementation of the Low Voltage directive in the UK and Belgium

When the 1973 EC Low Voltage directive 73/23/EEC was issued, Britain had to implement it into its national law. The Low Voltage directive was first incorporated into British law in the 1975 Statutory Instrument No. 1366 dated 12 August 1975. It was then modified and supplemented by the 1976 Statutory Instrument No. 1208 dated 30 July, 1976. In 1977, another modification was added under the "Electricity Supply Regulation published

¹²EN 41003, EN 60950 are first listed in 73/23/EEC OJ No. C210/13, 15 June, 1992; EN 60825, EN 60825-2 are listed in 73/23/EEC OJ No. 169/6, 22 June, 1994.

¹³"Article 10", 73/23/EEC.

in the 1977 Statutory Instrument, No. 137 published on 18 May, 1977. These standards were continually updated and modified according to European directives, based on international standards and modified according to international norms set out by the International Electrotechnical Commission (IEC).¹⁴

The transposition of the Low Voltage directive 73/23/EEC into Belgian national law followed more or less the same process. Belgium published directive 73/23/EEC as an "Arrêté Royal" (the equivalent of a "Statutory Instrument") of 23 March, 1977. The "Arrêté Royal" was then published in the "Moniteur Belge" of 31 March 1977. The "Moniteur Belge" is the official Belgian journal which publishes its national legislation. The European directive 73/23/EEC thus became effective in Belgian national law in 1977, nearly two years after it had been implemented into law in Britain.¹⁵

How European harmonised standards are implemented

As seen through the Low Voltage directive, European harmonised standards are implemented through the transposition of an EC directive. Essentially, the EC directives

¹⁴The list of the British Statutory Instruments for the EC directive 73/23/EEC was provided by Luis Montoya, Head of Unit for Mechanical Engineering and Electrical Engineering at DG III.D1, European Commission at Brussels. Mr. Montoya sent me a comprehensive list of the texts of transposition for the Low Voltage and Electromagnetic Compatibility Directives in each EC Member State including EFTA members. These were compiled and sent directly to me on 19th June, 1996. In my own research for Newbridge Networks, I cited and updated Mr. Montoya's list for each EEA member and Switzerland. *List of National Texts of Transposition for Directives 73/23/EEC and 89/336/EEC*. (Luis Montoya DG III, European Commission, 19th June 1996), p. 3; Diamente, C.C. *European Community Directives Analysis*. (Newbridge Networks Corporation, 1996), p. 9.

¹⁵*List of National Texts of Transposition for 73/23/EEC and 89/336/EEC*, p. 2; Diamente, *European Community Directives Analysis*, p. 11.

include the many harmonised standards which must be transposed and used across the Community. Once again, the harmonised standards and directives are designated in the *Official Journal of the EC*. For example, the Low Voltage directive 73/23/EEC included the harmonised European standard EN 60950¹⁶ which is a standard for "Information technology equipment including electrical business equipment".¹⁷ This standard has moreover been continuously updated according to international modifications based on the original IEC 950 standard. The IEC 950 standard is applicable to mains-powered or battery powered information technology equipment. IEC 950 is intended to prevent injury or damage due to the following hazards: electrical shock, energy hazards, fire mechanical and heat hazards, radiation hazards and chemical hazards. IEC 950 normally considers two types of people: operators and service personnel. These are all announced in the *Official Journal* under modification to 73/23/EEC. Please refer to Annex 10 for a copy of the directive and the designated standard.

European harmonised standards, like European directives, only become law when they are transposed into national Member State legislation. An example of this once again can be found in Britain. When EN 60950 was issued by Brussels, it was published under the modified EC directive 73/23/EEC. In Britain, the modified version of 73/23/EEC was implemented into British law under the given Statutory Instrument and designated as BS EN 60950. In this case, the additional "BS" before the European harmonised standard simply means "British Standard". The standard is now law in Britain until it is amended with

¹⁶Without abbreviations, "EN" signifies "European norme" or "European Standard".

¹⁷This European harmonised standard EN 60950 was first published in the "Official Journal of the European Communities" on August 15th, 1992 in Directive number C 210/24.

another "EN".¹⁸

The Main Directives for Terminal Equipment and the Designated Standards: 89/336/EEC: Electromagnetic Compatibility

Electromagnetic compatibility is an essential requirement for any electrical product being placed on the European Market. It went hand in hand with the safety requirements under the Low Voltage Directive for the approval of any piece of telecommunications terminal equipment. Technically speaking, electromagnetic compatibility is necessary to avoid a disturbance in the operation of all electrical/electronic apparatus, systems, and installations that are used in a common electromagnetic environment.¹⁹ Electromagnetic compatibility is officially defined as:

¹⁸The amendments are usually indicated in the EN title. For example: EN 60950:1992/A1:1993/A2:1994. The "A" followed by a number simply indicates an additional amendment based on the original IEC 950 standard. The EN is then transposed into national law as follows: BS EN 60950:1992/A1:1993. It may be noticed that the latest British transposition of the EN did not include the final 1994 amendment. *Commission-Communication within the framework of Council Directive 73/23/EEC of 19 February 1973 on the harmonization of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits*. OJ 93/C 319/02, 26th November, 1993; *Consumer Protection-The Electrical Equipment (Safety) Regulations*, S.I. No.3260, 1994; *British Approval Board for Telecommunications (BABT) Information Sheet No.701*, Issue 5.

¹⁹To understand the significance of electromagnetic compatibility (EMC), the following example is helpful: if someone is using a mobile/cellular phone inside an Intensive Care Unit of a hospital, the moving electric charge, consisting of magnetic and electric forces emanating from the mobile phone, may create a disturbance in the functioning of the hospital life support machinery or other types of medical equipment. Another example is the use of a mobile/cellular phone inside a moving aircraft. EMC tests provide for "immunity" from an electromagnetic disturbance and help to establish emission standards to ensure that emissions don't exceed the level of the electromagnetic environment and jeopardize either the machine or the safety of the environment.

Björklöf, Dag. "Present and Future EMC Requirements: Some Practical Considerations," *Compliance Engineering*, 13 (1996), pp. 5-56.

...the ability of a device, unit of equipment or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment.²⁰

The harmonised standards under both of the low voltage and electromagnetic compatibility directives guarantee a reasonable level of protection in the Member States for Community electric and electronic equipment.

The Electromagnetic Compatibility Directive and designated harmonised standards were first introduced in 1989 and have been in vigour since 1992. Until 1996, there were approximately 25 harmonised standards relating to EMC. Currently another 25 harmonised standards and amendments to previous standards are being prepared.²¹ The EMC directive specifically includes harmonised standards which regulate the minimum emission and immunity requirements for electromagnetic compatibility (EMC) in electrical equipment across the European Community. Some examples of EMC harmonised standards are: EN 55022 "Limits methods of measurement of radio interference characteristics of information technology equipment"²², EN 50081-1 "Electromagnetic compatibility generic emission standard- Part 1: residential, commercial and light industry", EN 50082-1 "Electromagnetic compatibility generic immunity standard- Part 1: residential, commercial

²⁰"Article 1, Definition 2", *Council Directive of 3 May 1989 on the approximation of the laws of the Member States Relating to Electromagnetic Compatibility*, 83/189/EEC, OJ No.L 139/19, 23rd May, 1989.

²¹Björklöf, *Compliance Engineering*, 13 (1996), p. 55.

²²"Publication of titles and references of European harmonised standards complying with the essential requirements", *Electromagnetic Compatibility Council Directive 89/336/EEC*, OJ No. 92/C 44/10, 19th February, 1992.

and light industry"²³, EN 50081-2 "Electromagnetic compatibility- Generic emission standard- Part 2: Industrial Environment"²⁴ and EN 50082-2 "Electromagnetic compatibility- Generic immunity standard- Part 2: Industrial Environment"²⁵. Note that EN 50081-1 is an emission standard for light industry which goes hand in hand with EN 50081-2 which is an immunity standard for the same sort of equipment. The next standards EN 50082-1 and EN 50082-2 are emission and immunity standards for heavy, industrial equipment.

The requirements under EMC directive 89/336/EEC are quite similar to the "Low Voltage Directive". In 89/336/EEC, the manufacturers are responsible for presenting a declaration of conformity to the requirements of the harmonised standards and those outlined in the directive. The declaration must contain a description of the apparatus, reference to the specification under which conformity is declared, and the manufacturer identification. The manufacturer must also stamp the piece of equipment to indicate conformity to the directive requirements.²⁶

The "New Approach", 73/23/EEC, 89/336/EEC and terminal equipment approvals

Both the Low Voltage Directive (73/23/EEC amended) and the Electromagnetic Compatibility Directive (89/336/EEC) draw upon some of the elements of the "New Approach" programme on standardization and harmonisation. Both of these directives for

²³89/336/EEC, OJ No. 92/C 90/02, 10 April, 1992.

²⁴89/336/EEC, OJ No. 94/C 49/03, 17, February 1994.

²⁵89/336/EEC, OJ No. 95/C 241/02, 16 September 1995.

²⁶"Article 10", 89/336/EEC.

example have drawn on the "Information Directive" 83/189/EEC by making it mandatory to list upcoming Community standards.²⁷ Both directives also have practiced the concept of "mutual recognition of conformity" which was introduced in the 1987 Green Paper. This simply means that each Member State recognises the same approval marks and certification procedures.²⁸

The New Approach Programme also focused on introducing harmonised standards and specific requirements for the full approval and mutual recognition of telecommunications terminal equipment. These harmonised standards were included in three directives: 86/361/EEC²⁹, 91/263/EEC³⁰ and 93/68/EEC³¹. Directive 86/361/EEC and Directive

²⁷This information requirement under 83/189/EEC is quoted directly in the EMC directive 89/336/EEC in the preamble. The Low Voltage Directive does not cite 83/189/EEC as it was first published in 1973. However, it is recognised as a first official attempt to give more information on technical standards.

²⁸The concept of mutual recognition of conformity was introduced in the 1987 Green Paper "Towards a Dynamic Economy- Green Paper on the Development of the Common Market for Telecommunications Services and Equipment".

²⁹*Council Recommendation of 24 July 1986 on the initial stage of the mutual recognition of type approval for telecommunications terminal equipment*, 86/361/EEC, OJ No.L217/21, 5 August, 1986.

³⁰*Council Directive of 29 April 1991 on the approximation of the laws of the Member States concerning telecommunications terminal equipment, including the mutual recognition of their conformity*, 91/263/EEC OJ No. L128/1, 23rd May, 1991.

³¹*Council Directive 93/68/EEC of 22 July 1993 amending Directives 87/404/EEC (simple pressure vessels), 88/378/EEC (construction products), 89/106/EEC (construction products), 89/336/EEC (electromagnetic compatibility), 89/392/EEC (machinery), 89/686/EEC (personal protective equipment), 90/384/EEC (non-automatic weighing instruments), 90/385/EEC (active implantable medicinal devices), 90/396/EEC (appliances burning gaseous fuels), 91/263/EEC (telecommunications terminal equipment), 92/42/EEC (new hot-water boilers fired with liquid or gaseous fuels) and 73/23/EEC (electrical equipment designed for use within certain voltage limits)*. 93/68/EEC, OJ No.L220/1, 30th August, 1993.

91/263/EEC were designed for the 1992 deadline and were dedicated to approving terminal equipment. The directive 91/263/EEC was simply a follow-up version of 86/361/EEC which responded to the demands of the Green Paper on "the development of the Common Market for Telecommunications Services and Equipment".³² It tried to accelerate full mutual recognition of type approval of telecommunications approval as the measure vital for the development of a competitive Community-wide terminal market.

Both 86/361/EEC and its amended version 91/263/EEC are technically complex directives dealing with two types of terminal equipment requirements: "essential requirements" and "conformity assessment requirements". The "essential requirements" for terminal equipment include fulfilling the harmonised standards for low voltage (73/23/EEC), electromagnetic compatibility (89/336/EEC), protection of the telecommunications network from harm, and interworking of terminal equipment with public telecommunications network equipment. The "conformity assessment requirements" are a bit more complex. They included a series of EC examinations by "Notified Bodies"³³ using ISO product quality

³²It is important to note that the supply of terminal equipment was de-regulated under 88/301/EEC to allow competition in the telecommunications terminal equipment market. To accommodate this, regulations were set to assure terminal equipment "type approval". This simply means that equipment is guaranteed to achieve a certain level of performance with respect to certain parameters such as voice quality. These regulations are "mutually recognised" across the Community and avoid the previous abuse by national regulators of adding additional requirements for imported equipment to protect their terminal equipment markets.

³³Notified Bodies are the national approval authorities designated by the Commission, responsible for approving telecommunications terminal equipment or aspects of terminal equipment. A list of Notified Bodies is updated in the 91/263/EEC and there are also specific Notified Bodies for 73/23/EEC and 89/336/EEC. In Britain, according to OJ No. C280/136 of 25 October, 1995, the Notified Body for terminal equipment is the British Approvals Board for Telecommunications (BABT). BABT is also the Notified Body for the EMC directive 89/336/EEC.

assurance (ISO 9002) and full quality assurance (ISO 9001) tests. These include EC declarations of conformity as described in the Annexes I, II, III, IV³⁴ of 91/263/EEC. Type testing was performed using Common Technical Requirements (CTRs) instead of European standards (ENs). Examples of the CTRs are: CTR 2 "Approval Requirement for Data Terminal Equipment to Connect to Packet Switched Public Data Networks Using CCITT recommendation X.25 interfaces: NET 2 edition 1994 excluding clauses 9 and 10"³⁵, iCTR 3 "Pan European ISDN Basic Rate Access: NET 3 1993 (ETS 300 153 or iTBR 3)"³⁶ and iCTR 4 "Pan European ISDN Primary Rate Access: NET 5 1993 (ETS 300 156) or iTBR 4".³⁷

The CE Mark/Amendment Directive 93/68/EEC

In 1993, The Low Voltage Directive (73/23/EEC), Electromagnetic Compatibility (89/336/EEC) and Terminal Equipment Directives (91/263/EEC) were all amended under the new CE Mark directive 93/68/EEC.³⁸ The CE Mark or "Amending Directive" was created as

³⁴Each Annex outlines the technical requirements for type testing, quality audit and full quality assurance.

³⁵96/71/EEC, OJ No. L13/23, 18th January 1996.

³⁶94/797/EEC, OJ No. L 329/14, 20th December 1994.

³⁷94/796/EEC, OJ No.L329/1, 12th December 1994.

³⁸*Council Directive 93/68/EEC of 22 July 1993 amending Directives 87/404/EEC (simple pressure vessels), 88/378/EEC (construction products), 89/106/EEC (construction products), 89/336/EEC (electromagnetic compatibility), 89/392/EEC (machinery), 89/686/EEC (personal protective equipment), 90/384/EEC (non-automatic weighing instruments), 90/385/EEC (active implantable medicinal devices), 90/396/EEC (appliances burning gaseous fuels), 91/263/EEC (telecommunications terminal equipment), 92/42/EEC (new hot-water boilers fired with liquid or gaseous fuels) and 73/23/EEC (electrical equipment designed for use within certain voltage limits). 93/68/EEC, OJ No.L220/1, 30th August, 1993.*

result of both the "New Approach" and the 1989 directive "On a Global Approach to Testing and Certification."³⁹ The "New Approach" insisted on facilitating the free movement of goods across the Community with harmonised regulations. The "Global Approach" insisted on a consistent approach to "proof of conformity" within the EC.⁴⁰ As such, the CE Mark/Amendment directive 93/68/EEC established the "CE Mark"⁴¹ as an official "proof of conformity" for standardization and approvals. The CE mark would be officially recognised across the European Community and would enable all marked products to move freely across the Community.

The "CE Mark" under directive 93/68/EEC became the official method of marking terminal equipment. All terminal equipment which was approved under directives 73/23/EEC, 89/336/EEC and 91/263/EEC had to bear the "CE mark" as the official mark of standards approval and certification according to the requirements of each directive.⁴² An example of the "CE Mark" is included in Annex 11. The only exception under directive 91/263/EEC was the requirement of an additional symbol to indicate that the piece of equipment was intended and suitable for connection to the public telecommunications network. This symbol is also included in Annex 11.

³⁹*Council Resolution of 21 December 1989 on a Global Approach to Conformity Assessment, OJ No.90/C 10/01.* This directive was discussed in the previous chapter. Essentially it stresses the importance of a global approach to recognising mutual proofs of conformity for telecommunications equipment.

⁴⁰"Preamble", 93/68/EEC.

⁴¹"CE" stands for "conformité européenne", or European conformity.

⁴²Of course the "CE mark/Amending Directive" is not only limited to terminal equipment regulations. It also applies to the other directives mentioned in its official title. Please refer back to footnote #38 in this chapter.

The impact of the CE mark directive on Low Voltage and EMC

The "CE Mark/Amending" directive rendered the approvals certification procedures for telecommunications equipment easier by harmonising the regulations. The regulations for 73/23/EEC (Low Voltage) and 89/336/EEC (EMC) approvals were all amended to include a "manufacturer's declaration" of conformity to the designated harmonised standards, and the "CE mark" stamped on the piece of equipment as proof of conformity. Under the Low Voltage directive, these new regulations became mandatory across the Community as of 1 January, 1997. Under the EMC directive, both the manufacturer declaration and the CE mark became mandatory as 1 January 1996.⁴³ With these new regulations, any piece of equipment that was stamped and that held a manufacturer's declaration of conformity to the harmonised standards could be used in any Member State of the EC. Furthermore, the national Member State authorities for telecommunications could not demand any further laboratory testing or national deviations for the piece of equipment to be used within their country. The rules were pan-European and failure to comply with them could incite action by the European Court of Justice and/or the European Commission. This was the crowning piece of legislation for the regulation of harmonised standards for terminal equipment across the European Community.

⁴³Please note that different regulations apply to radio communication equipment under the EMC directive.

Conclusion

This chapter, though seemingly technical, has analysed the process of implementing a telecommunications terminal equipment standard. It has explained the role of directives in the implementation of European harmonised standards into Member State legislation. Furthermore, three "New Approach" telecommunications directives were examined: the "Low Voltage" 73/23/EEC, "Electromagnetic Compatibility" 89/336/EEC and the "CE Mark/Amendment" 93/68/EEC. The latter directive 93/68/EEC, though at times filled with technical jargon, simply amended the "Low Voltage" and "EMC" directives and the "Telecommunications Terminal Equipment" directive 91/263/EEC. The greatest contribution of 93/68/EEC was that it implemented the "CE mark" and manufacturer's declaration as the official method of proving that a piece of telecommunications terminal equipment was safe and ready to be distributed within the EC. These features enhanced the Commission's "New Approach" to technical standardization and harmonisation, and enabled European standards to move faster from the Community level to the national level. With the "New Approach", the process of telecommunications terminal equipment standards integration thus began to show the real signs of success.

**Chapter 5:
How Integrated was Europe? The Results 1994-1996**

This chapter assesses the practical results of the European Commission's standardization programme. It supplements Chapter 4 by presenting two case studies of the legal implementation of European directives and harmonised standards. The first case study is based on a 1994 report by the European Commission on the legal implementation of "New Approach" terminal equipment directives in 1994. It is a brief analysis which states which Member States implemented the directives for "Low Voltage" 73/23/EEC, "Electromagnetic Compatibility" 89/336/EEC, "Telecommunications Terminal equipment" 91/263/EEC, and the "CE Mark/Amendment" 93/68/EEC. The second case study is a more detailed country by country analysis of the implementation of directives and standards. In particular, it focuses on the implementation of the Low Voltage and Electromagnetic Compatibility directives.¹ The standards used for both of these directives will be those cited in Chapter 4. They obviously are not the *only* harmonised standards introduced by the Commission and standards organizations; however they along with the 1994 report give a good idea of the level of integration for telecommunications terminal equipment. This chapter closes with a look at the growth of mutual recognition agreements (MRAs) between Europe and Third Countries and assesses how Third Countries such as Canada perceived the European harmonisation process

¹The Terminal Equipment Directive 91/263/EEC will not be analysed in the second section as it is a technically complex directive which is still under revision by the Commission. The directive and its designated "Common Technical Requirements" (CTRs) have been difficult to implement. In some cases, the Member States still haven't created the proper infrastructure to support the tests required for sophisticated systems such as the ISDNs. My summer research for Newbridge Networks Corporation did include the implementation of 91/263/EEC yet I found it difficult to assess the true level of integration as the directive always seemed to be changing including the CTRs. For further information on the implementation of the directive 91/263/EEC, please refer to: *Telecoms Type Approval: Policies and Procedures for Market Access*. OECD, 1992; C.C. Diamente, *European Community Directives Analysis*, Newbridge Networks Internal Document, 1996.

for terminal equipment standards.

INTEGRATION PROGRESS IN 1994

Implementation of 91/263/EEC: Telecoms Terminal Equipment Directive

Some official Community results have been published to indicate the level of integration across the Community. In particular, in 1995 the Commission published the *Twelfth Annual Report on Monitoring the Application of Community Law (1994)*.² The report noted that by 1994, only eight Member States had notified the Commission that they had implemented the basic directive on telecommunications terminal equipment 91/263/EEC. Furthermore, upon verification of these results, the Commission found that only five Member States --Denmark, France, Italy, Portugal and the United Kingdom-- had actually implemented the entire directive. The notifications from Spain, Germany and the Netherlands were incomplete. As for the other Member States that hadn't yet implemented 91/263/EEC --Belgium, Greece, Ireland and Luxembourg-- they were referred to the Court of Justice in 1993 for non-compliance with Community regulations.³

²*Twelfth Annual Report on Monitoring the Application of Community Law (1994)*, Brussels: COM(95) 500 final, 7 June, 1995, pp. 1-346.

³The following are the infringement numbers and decisions noted in the Commission report against non-complying Member States for the implementation of 91/263/EEC.
Belgium: 92/0966, no measures notified, Article 169 in letter in 1992, referral in 1994.
Greece: 92/0975, no measures notified, Article 169 in letter in 1992, referral in 1994.
Ireland: 92/0985, no measures notified, Article 169 in letter in 1992, referral in 1994.
Luxembourg: 92/0994, no measures notified, Art. 169 letter in 1992, referral in 1994.
Twelfth Annual Report, p. 250.

Implementation of 93/68/EEC: CE Mark/Amendment Directive

The European Commission also discovered that not all Member States had implemented directive 93/68/EEC. The "CE Mark/Amendment" Directive should have been implemented into national law by January 1st, 1995. Instead, the Commission Report found that only France, Italy, the Netherlands and Portugal had notified the Commission of their implementation measures. In essence, only four Member States out of twelve had actually complied with the Community harmonisation regulations.⁴

Implementation of 89/336/EEC: Electromagnetic Compatibility Directive

The first version of the Electromagnetic Compatibility directive 89/336/EEC suffered a general lack of implementation. Only seven Member States notified the Commission of implementing measures: Denmark, Germany, France Italy, Luxembourg, Portugal and the United Kingdom. Belgium, Greece, Spain, Ireland and the Netherlands were instead taken to the Court of Justice for infringements of Community Regulations.⁵

⁴*Twelfth Community Report*, pp. 20-21.

⁵The following are the infringement numbers and decisions noted in the Commission report against non-complying Member States for 89/336/EEC:

Belgium:- 92/0652, no measures notified, reasoned opinion in 1993

Greece:- 92/0742, no measures notified, reasoned opinion in 1993

Spain:- 92/0743, no measures notified, reasoned opinion in 1993

Ireland:- 92/0793, no measures notified, reasoned opinion in 1993, referral in 1994

Netherlands:- 92/0875, no measures notified, reasoned opinion in 1993, referral in 1994.

Twelfth Annual Report, p.220.

Implementation of 73/23/EEC: Low Voltage Directive

The Low Voltage Directive 73/23/EEC was the *only* directive that was implemented by all of the Member States. According to the Commission Report, all Member States had notified the Commission of the implementation of this directive.⁶

INTEGRATION PROGRESS IN 1996:

Implementation of the Low Voltage and EMC directives and standards: 1996

The information in the following section comes directly from the national ministries and telecommunications institutions of each Member State of the European Union. It is the result of a four month research project with the Canadian telecommunications company Newbridge Networks Corporation. Most of the legislation has also been translated professionally and this will be indicated in the reference. The page numbers will not be cited as the translated versions do not correspond to the original documents. Some documents citing the national transposition texts and standards have also come directly from the Commission and CENELEC. With these, I have verified all of the national information and standards given to me by the national institutions.⁷

⁶*Twelfth Annual Report*, p.143.

⁷The official Community lists used to double check national information are: *List of National Texts of Transposition fro Directives 73/23/EEC and 89/336/EEC*, (Luis Montoya: DG III), Brussels: 1996; *List of National Texts of Transposition for Directives 91/263/EEC and 93/68/EEC*, (Analisa Cannoni: DG XIII), Brussels: 1996; *CENELEC: National Implementation of European Standards*. Brussels: CENELEC, December 1995 (annexes have been added updating the harmonised standards to 1996). I am also indebted to Gail Goudreau, librarian at the *Standards Council of Canada* who allowed me to double check European national standards with the Council's international standardization catalogues: Ottawa, summer 1996.

Austria:

Austria entered the European Union in 1995. Hence, the implementation and transposition of Community directives and harmonised standards has occurred a bit later than for most Member States. The directive 73/23/EEC for example, was not completely implemented by late 1996. Austria still demanded national deviations in the approval of telecommunications equipment. Specifically, under their Low Voltage/Safety Laws for terminal equipment, the Austrian Notified Body "Österreichischer Verband für Elektrotechnik (ÖVE)" and the Ministry demanded certificates of conformity including manufacturer information, designation of electrical equipment, type designation, serial number if the declaration of conformity did not apply to all operating equipment of this type, and a statement of the harmonised standards to which the equipment corresponded.⁸ EC certificates of conformity issued by the establishments listed in the *Official Journal of the European Communities* were accepted. Yet, the equipment still had to be marked according to the ÖVE national symbol and not the CE mark. Lastly, only two of the four aforementioned standards were implemented: ÖVE EN 60950:A1:1993, ÖVE EN 41003:1993. The other two standards EN 60825-1 and EN 60825-2 are still under consideration.⁹

⁸This information was taken from translated versions of the following national regulations: *Elektrotechnikgesetz 1992-ETG 1992, BGBl. Nr. 106/1993; Niederspannungsgeräteverordnung 1993- Nsp GV 1993, BGBl. Nr.44/1994.*

⁹ÖVE: *Europäische Normen unter Harmonisierungsdokumente von CENELEC und deren Übernahme in das österreichische Vorschriftenwerk: Teil 3- Niederspannungsrichtlinie Zugeordnete Europäische Normen und Harmonisierungsdokumente.* Vienna: ÖVE, August 1994.

Under the Electromagnetic Compatibility directive, Austria did implement and transpose the European requirements for 89/336/EEC. It accepted a "manufacturer declaration" of conformity and the CE mark on pieces of tested equipment.¹⁰ All of the five aforementioned EMC standards were transposed: ÖVE EN 55022:1995-03, ÖVE 50081-1:1992, ÖVE 50081-2:1993, ÖVE EN 50082-1:1992 and ÖVE EN 50082-2:1995.¹¹

Belgium:

Belgium has implemented both the Low Voltage and the Electromagnetic Compatibility Directives. The national transposition texts for 73/23/EEC and 89/336/EEC indicated the European harmonised "manufacturer declaration" of conformity with the CE mark.¹² The harmonised standards were also implemented with the latest amendments. The designated harmonised standards for low voltage were: NBN C 77-950/A1:1993, NBN EN 41003, NBN EN 60825-1(E2):1995 and NBN EN 60825-2:1995. The designated harmonised standards for electromagnetic compatibility were: NBN EN 55022(E2): 1995, ENE EN 50081-1(E1):1993, NBN EN 50081-2(E1):1994, NBN EN 50082-1(E1):1993, NBN EN 50082-2(E1):1996.¹³

¹⁰The following are the transposition texts for 89/336/EEC in Austria: *Elektromagnetische Verträglichkeitsverordnung 1993- EMV 1993, BGBl.No.43/1994, EMVV 1995.*

¹¹*ÖEK: European Standards and Harmonisation Documents from CENELEC, Incorporation in Austrian Specifications: Part 4: EMC Directive 89/336/EEC Associated European Standards (Translated Version) Vienna: ÖVE, April 1996.*

¹²*Arrêté Royal du 23 mars 1977, Moniteur Belge du 31 mars, 1977; Arrêté Royal du 29 mai, 1985, Moniteur Belge du 4 juin, 1985; Moniteur Belge du 24 juin, 1994, Arrêté Rodyal 94/1662 du 18 mai 1994.*

¹³*CENELEC, National Implementation of European Standards, 1995.*

Denmark:

Denmark has transposed and implemented the Low Voltage and Electromagnetic Compatibility directives into Danish law. Both national transposition texts indicate a "manufacturer declaration" of conformity to the necessary European requirements with the mandatory CE Mark.¹⁴ The designated national standards included in both of these directives corresponded to the European harmonised standards. The Low Voltage harmonised standards were: DS EN 60950 (under revision to add latest amendments), DS EN 41003, DS EN 60825-1:1994, DS EN 60825-2:(E1):1995. The Electromagnetic Compatibility standards were: DS EN 55022+A1:1995, DS EN 50081-1:1994, DS EN 50081-2:1994, DS EN 50082-1:1994 and DS EN 50082-2:1996.¹⁵

Finland:

Finland is another of the three Member States to enter the EU in 1995. Despite its late entry, it too has implemented the Low Voltage and Electromagnetic Compatibility requirements. Both national regulations indicate the acceptance of a "manufacturer declaration" of conformity and the CE mark on the tested piece of equipment.¹⁶ They have also adopted the aforementioned harmonised standards designated for safety and Electromagnetic compatibility: SFS EN 60950:1996, SFS EN 41003: 1995, SFS EN 60825-

¹⁴*Law No.797 of August 30th 1994; Lov(Act) 216 of 10 April 1991: Lovtidende Nr. 216 of 10 April 1991; Amendment 913 of 8 December 1993; Technical Regulation 796 of 5 December 1991; Technical Regulation 796 of 5 December 1991.*

¹⁵*Dansk Standard Katalog 1996. Copenhagen: Dansk Standard, 1996.*

¹⁶*Sähkölaki (319/79), ellag (319/79); Sähkölaki 319/79 (muutokset 991/87, 59/89, 814/90, 1067/90, 142/93); THK 20B/95; THK 24A/94M. Finland did not send me their documents- they have them listed on the internet at <http://www.thk.fi>*

1:1995, SFS EN 60825-2:1995, SFS EN 55022:1995, SFS EN 50081-1:1992, SFS EN 50081-2:1994, SFS EN 50082-1:1992, SFS EN 50082-2:1996.¹⁷

France:

France has completely transposed and implemented the directives 73/23/EEC and 89/336/EEC. According to the Ministry advisory documents they state that the "manufacturer declaration" of conformity and CE mark are required for every tested piece of equipment.¹⁸ The national designated harmonised standards also correspond to the mandatory ENs: NF EN 60950:1993 + A1,A2, NF EN 41003:1993, NF EN 60825-1:1994, NF EN 60825-2:1994, NF EN 55022:A1(1996), NF EN 50081-1:1992, NF EN 50081-2:1993, NF EN 50082-1:1992 , NF EN 50082-2:1995.¹⁹

Germany:

Germany has transposed and implemented the Low Voltage and Electromagnetic Compatibility directives. Both directives accept the "manufacturer declaration" of conformity and the CE mark on tested equipment.²⁰ The harmonised standards designated in the safety

¹⁷*Suomen Standardisoimisliitto- New Approach- Direktiiveihin*, Helsinki: SFS, 1996.

¹⁸*Arrêté Royal du 23 mars 1977, Direction Générale des Postes et Télécommunications, February 1996.* The cited French laws for 73/23/EEC and 89/336/EEC are: *Décret No. 75-648 du 26.08.1977, JORF du 12.09.1977; Décret No.85-1081 du 3.10.1985; Décret No. 92-587 du 26.08.1992 publié JORF du 2.07.1992; Décret 94-737 du 22.08.94 publié JORF du 28.08.1994; Décret pour l'application de la directive 93/68/CEE au 13.03.1995 publié au JORF du 15.03.1995 p. 3988.*

¹⁹The standards were taken in part from the Ministry advisory documents and the *CENELEC -National Implementation of European Standards, 1996.*

²⁰*First Regulation concerning the Equipment Safety Law dated 11 June 1979,1 GSGV(BGBl I 1979, 629); Law Governing the Electromagnetic Compatibility of Equipment (EMVG), Issue 1995 Part I, No.47- 8 September 1995.*

regulations are: DIN EN 60950/A2:1994, DIN EN 41003:1993, DIN EN 60825-1/A11-1996, DIN EN 60825-2:1994. The electromagnetic compatibility standards are: DIN EN 55022/A2-1996, DIN EN 50081-1:1993, DIN EN 50081-2:1994, DIN EN 50082-1:1993, DIN EN 50082-2:1996.²¹

Greece:

Despite extreme difficulty in obtaining the necessary documents, eventually it was found that Greece had transposed 73/23/EEC and 89/336/EEC into their national laws.²² The Greek Low Voltage and Electromagnetic Compatibility regulations indicated acceptance of the "manufacturer declaration" along with the CE mark affixed to equipment.²³ The harmonised standards designated under the Low Voltage and Electromagnetic Compatibility also conformed to European regulations. These were: ELOT EN 60950/A1/1993, ELOT EN 41003:1993, ELOT EN 60825-1:1995, ELOT EN 60825-2:1995, ELOT EN 55022:1995, ELOT EN 50081-1:1995, ELOT EN 50081-2:1994, ELOT EN 50082-1:1995, ELOT EN 50082-2:1996.²⁴

²¹*Deutsches Institut für Normung Katalog, 1996.* Berlin: DIN, 1996.

²²It took me approximately six months to obtain the documents. I contacted the Ministry in Greece, the Greek Representatives in Brussels and finally the European Commission to launch a complaint against a general non response of telephone and fax numbers. The documents finally arrived in Greek on the last week of my work term (May-October 1996)!! They were subsequently translated.

²³*Government Gazette of the Hellenic Republic ØEK 78/B of 11 December 1992, p.826; ØEK 688/ 13 September 1994- 89/336/EEC, 93/68/EEC.*

²⁴*Hellenic Organisation for Standardisation: EAOT Catalogue of Hellenic Standards, 1994.* Athens: ELOT, 1994.

Ireland (Eire):

Ireland seems to have had problems transposing and implementing the mandatory European regulations. The Electromagnetic Compatibility directive **was not implemented**, and further research shows that the Court of Justice has taken action against this non-compliance to Community regulations.²⁵ The National Standards Authority of Ireland (NSAI) however, has published advisory documents on electromagnetic compatibility approvals regulations which indicate acceptance of the European harmonised "manufacturer declaration" and the CE mark.²⁶ The harmonised standards for electromagnetic compatibility also conform to European requirements: IS EN 55022:1995, IS EN 50081-1:1992, IS EN 50081-2:1994, IS EN 50082-1:1992, IS EN 50082-2:1996.²⁷

The Irish Low Voltage Directive conforms to European requirements. It was transposed and indicates acceptance of a "manufacturer declaration" with the appropriate CE mark.²⁸ The designated harmonised standards for this directive also conform to the original

²⁵According to an article in the regulatory compliance journal *Compliance Engineering*, Ireland was brought before the Court of Justice for the non implementation of 89/336/EEC and fined for not honouring its obligations under the EC Treaty (OJ, Case C-940/94). The mandatory deadline for the transposition of 89/336/EEC was 1 January 1996.

"Court of Justice Censures Ireland for Dawdling on EMC Directive", *Compliance Engineering*, 1996(13:1), p. 86.

²⁶I spoke with Mr. Ian Cowan of NSAI and he advised me that Ireland does follow EC regulations for electromagnetic compatibility testing. Ireland hasn't legislated this in law however.

²⁷*NSAI Standards Catalogue 1994*. Dublin: NSAI, 1994.; *CENELEC National Implementation of European Standards*.

²⁸*S.I. No.62 of 1975 European Communities Low Voltage Electrical Equipment Regulations; S.I. No.11 of 1976; S.I. No.123 of 1979; S.I. No.428 of 1992; Amendment Regulations S.I. No.307 of 1994; S.I. No.457 of 1994; National Standards Authority (NSAI) 73/23/EEC and CE Information*.

European standards except for EN 60825-2 which doesn't seem to be included as part of the Low Voltage standards. The other standards are: IS EN 60950 A1/1993, IS EN 41003:1993, IS EN 60825-1:1994.²⁹

Italy:

Though Italy has officially transposed the Low Voltage and Electromagnetic Compatibility directives, obtaining the actual documents was a bit of a game. The Italian authorities at the Ministry of Posts and Telecommunications were not sure where the documents were located.³⁰ Upon further investigation, the National Libraries at Rome and Florence seem to have "misplaced" them!³¹ Eventually photocopies of the originals were obtained by a testing lab engineer at Turin!³² Both the transposed versions of 73/23/EEC and 89/336/EEC indicated the acceptance of a "manufacturer declaration" of conformity with the CE mark affixed to the tested piece of equipment.³³

Much in the same difficult spirit, the designated Italian harmonised standards for both of the transposed directives are not clear. The Italian safety and electromagnetic standards in

²⁹*NSAI Standards Catalogue 1994; CENELEC List of National Implementation of European Standards.*

³⁰I spoke with Ing. Flaviano and Ing. Mele at the *Ministero delle Poste e Telecomunicazioni* in Rome. June 1996.

³¹I spoke with the secretary of the Government Publishing Office in Rome which also has a branch in Florence: *Istituto Poligrafico e Zecca dello Stato*.

³²Ing. Giunta from the *Centro Studi e Laboratori Telecomunicazioni (CSELT)* in Turin kindly sent me copies of their own documents for safety and EMC testing- July 1996.

³³*Legge No. 791 del 18.10.1977, Gazzetta Ufficiale No. 298 del 2.1.1977; Decreto legislativo No. 476 del 4.12.92- Supplemento ordinario Gazzetta Ufficiale- Serie Generale No. 289 del 9.12.1992.*

some cases have been transposed from the international IEC and CISPR standards, which do in turn correspond to the European harmonised standards, yet the numbering scheme is different. Fortunately, an engineer from the Italian Standards Authority was kind enough to write down the Italian standard with the corresponding European or international transposition.³⁴ All of the standards should be compatible. However, I have listed them in previous reports in bold for engineers to double check when testing to them. The following are the Italian safety standards: CEI EN 60950/A1:1993 (this standard corresponds directly), CEI 74-3: 2 ed.1993,³⁵ CEI (IEC 825-2) 76-4: 1 ed. 1995.³⁶ The Italian designated Electromagnetic Compatibility standards are: CEI 110-5: 2 ed. 1995,³⁷ CEI 110-7: 1 ed. 1992,³⁸ CEI 110-13: 1 ed. 1994,³⁹ CEI 110-8: 1 ed. 1992⁴⁰ and CEI 110-25: 1 ed. 1995.⁴¹

³⁴Signor Giuseppe Buonincontri from *Comitato Elettrotecnico Italiano* (CEI) in Milan, was kind enough to write out all of the Italian standards with their international equivalence. These were faxed over to me on the 26th June, 1996.

³⁵This standard corresponds to EN 41003:1993

³⁶This standard corresponds directly to the international standard IEC 825-2 and transposes EN 60825-2. The harmonised EN 60825-1 has not been listed. I have double checked in the original CEI standards catalogue for 1995 and still could not locate it. I did however find the Italian standard listed in the *CENELEC* catalogue as: CEI EN 60825-1. *Norme e Pubblicazioni CEI, April 1994*. Milan: CEI, 1995; *CENELEC National Implementation of European Standards, 1995*.

³⁷This corresponds directly to the International standard CISPR 22. The European equivalent is EN 55022:1995.

³⁸This corresponds to EN 50081-1:1992.

³⁹This corresponds to EN 50081-2:1994.

⁴⁰This corresponds to EN 50082-1:1992.

⁴¹This corresponds to EN 50082-2:1995.

Luxembourg:

Luxembourg has completely transposed both European directives and their listed harmonised standards. Both of the directives accept the "manufacturer declaration" of conformity and the CE mark on telecommunications equipment.⁴² The standards themselves are the mirror image of the European designated standards and do not include any particular Luxembourg acronym. The Low Voltage standards are: EN 60950/A1:1993, EN 41003:1993, EN 60825-1:1994, EN 60825-2:1994. The Electromagnetic Compatibility standards are written in the same manner: EN 55022:1995, EN 50081-1:1992, EN 50081-2:1993, EN 50082-1:1992 and EN 50082-2:1995.⁴³

The Netherlands:

The Netherlands has also transposed both the Low Voltage and Electromagnetic Compatibility directives. Furthermore, the national Ministry of Telecommunications and the laboratory "Telefication", offer excellent advisory documents in English explaining the process of approvals under these directives. All of these documents confirm that the Dutch transposition texts accept the "manufacturer declaration" and the CE mark on tested electrical equipment.⁴⁴ The designated Dutch standards also correspond to the European harmonised

⁴²*Règlement Grand Ducal du 27.08.1976 A-54 du 7.09.1976; Projet de règlement Grand Ducal modifiant le règlement GD du 27.08.1976; Règlement Grand Ducal du 20 avril modifiant le règlement Grand Ducal du 27 août 1976 portant l'application de la directive 73/23/CEE; Règlement Grand Ducal du 21 avril 1993 concernant la compatibilité électromagnétique; Règlement Grand Ducal du 20 avril 1995 modifiant règlement Grand Ducal du 21 avril 1993 concernant la compatibilité électromagnétique.*

⁴³*CENELEC National Implementation of European Standards 1995.*

⁴⁴*KB 13.02.1976- MIN VER No.379/III/755/EEK 2.04.1980, NSC No.68 of 8.04.1980, Warewetbesluit Elektrotechnische Produkten 1992; Wet op Telecommunicatie Voorzieningen (WTV) amendment of 19.95.1994 (Staatsblad 386, 1995), Regulations: 15*

standards though some of the safety standards have been written a bit differently. The Low Voltage standards are: NEN EN 60950:A2:1994, NEN EN 41003:1995, NEN 10825-1:1995⁴⁵, NEN 19825-2:1994.⁴⁶ The Electromagnetic Compatibility standards are: NEN EN 55022/A1:1995, NEN EN 50081-1:1994, NEN EN 50081-2:1994, NEN EN 50082-1:1993, NEN EN 50082-2:1995.⁴⁷

Portugal:

Portugal has adopted and transposed the European directives 73/23/EEC and 89/336/EEC. Both directives indicate acceptance of the required "manufacturer declaration" and the CE mark on equipment.⁴⁸ Portugal has also adopted the harmonised standards under both of the directives. The designated standards for the Portuguese transposed Low Voltage Directive are: NP EN 60950:1992/A1:1993, NP EN 41003:1993, NP EN 60825-1:1994, NP EN 60825-2:1994. The Electromagnetic Compatibility standards are identical to the designated European EMC standards: EN 55022:1994, EN 50081-1:1992, EN 50081-2:1993,

August 1994 (Staatsblad 387, 1995); Good Business Assured with CE- Low Voltage Directive. The Hague: Ministry of Transport, Telecommunications, Posts and Public Works (HDPT).?; Good Business Assured with CE- Electromagnetic Compatibility. The Hague: HDPT,?; Approval Procedures for Terminal Equipment- Guide for Manufacturers and Importers. Arnhem: Telefication, January 1996.

⁴⁵This corresponds to EN 60825-1.

⁴⁶This corresponds to EN 60825-2.

⁴⁷*Nederlands Normalisatie- Institut:Normalisatie Catalogue 1994. Delft: Nederlands Normalisatie Institut, 1994; CENELEC National Implementation of European Standards, 1995.*

⁴⁸*Decreto Ley No.117/88 published in Diario da Republica No.85 of 12.04.1988; Decreto Ley 74/92 Diario Rep. No.99I serie A de 05.05.29, amended by Decreto Ley 98/95 Diario Rep. No.114 I serie B de 95.05.17; Portuaria 767-1/93, Diario rep. No.205 I serie B de 93.98.31, changed by 935/95, D.R. 169 I Serie B of 95.07.24.*

EN 50082-1:1992, En 50082-2:1995.⁴⁹

Spain:

Spain has also adopted and transposed the Low Voltage and Electromagnetic Compatibility Directives into their national laws. These documents indicate acceptance of the required "manufacturer declaration" and the CE mark on tested equipment.⁵⁰ The Spanish harmonised standards for the transposition of 73/23/EEC conform to the European harmonised ENs. The accepted standards are: UNE_EN 60950-A2:1996, UNE_EN 41003:1996, UNE_EN 60825:1993⁵¹. The accepted Electromagnetic Compatibility standards are: UNE_EN 55022:1995, UNE_EN 50081-1:1994, UNE_EN 50081-2:1994, UNE_EN 50082-1:1994, UNE_EN 50082-2:1994.⁵²

Sweden:

Despite Sweden's late entry into the EU in 1995, it has been quite prompt in implementing the European directives 73/23/EEC and 89/336/EEC.⁵³ In fact both directives

⁴⁹*Instituto Português da Qualidade (IPQ)- List of Harmonised ENs accepted by Portugal.* Lisbon: IPQ, 1996.

⁵⁰*Real Decreto 7/1988 (Bolletín Oficial del Estado 14.1.1988) Orden Ministerial 6.06.1989 (BOE 21.6.1989); Real Decreto 444/1994 del 11.03.94 (BOE No.78 del 1.04.1994- p.10.286).*

⁵¹This last standard does not differentiate between EN 60825-1 and EN 60825-2.

⁵²*Catálogo de Normas 1996 AENOR.* Madrid: Asociación española de normalización y certificación, 1996.

⁵³The EFTA states (Iceland, Norway, Liechtenstein) in general have all implemented EC legislation into their national laws as part of the European Economic Area (EEA) agreements. The only exception is Switzerland which does not belong to the EEA though it is still a member of EFTA. The Swiss have implemented similar directives and generally accept EEA manufacturer declaration and standards. For more precise information on the Swiss laws pertaining to safety and electromagnetic compatibility, please refer to the

accept the "manufacturer declaration" and the CE mark on tested equipment.⁵⁴ The designated standards for both of the directives conform to the European standards. The Low Voltage Standards are: SS EN 60950:A3:1995, SS EN 41003:A1:1993, SS EN 60825-1:1994+ amd.1995, SS EN 60825-2:1994. The Electromagnetic Compatibility standards are: SS EN 55022:1994, SS EN 50081-1:1992, SS EN 50081-2:1993, SS EN 50082-1:1992, SS EN 50082-2:1995.⁵⁵

United Kingdom:

The United Kingdom was very precise in implementing European directives. The Low Voltage and Electromagnetic directives were transposed into their national legislation with the required "manufacturer declaration" and CE mark requirements.⁵⁶ The designated harmonised standards under 73/23/EEC have been implemented:

BS EN 60950:1992/A1:1993, BS EN 41003:1993, BS EN 60825-1:1994 and BS EN 60825-2:1995. The British Electromagnetic Compatibility standards also conform to the original European designations: BS EN 55022:1995, BS EN 50081-1:1992, BS EN 50081-2:1994,

following documents: *Ordinance on Electrical Low Voltage Equipment (NEV)*, 7 December 1992 and *Ordinance on Electrical Low Voltage Equipment (NEV-EVED)*, 1 February 1996.

⁵⁴A. *Lagen 1902:7 s.1 innefande vissa bestämmelser om elektriska anläggningar; B. Förordning (1992:1068) om elektrisk materiel; C. Föreskrifter (ELSÄK-FS 1993/94) om viss elektrisk materiel; A-Lag (1992:1512) om elektromagnetisk kompatibilitet, B.Förordning (1993:1067) om elektromagnetisk kompatibilitet- latest amendment in (SFS 1993:1329); C. ELSÄK-FS 1995:5).*

⁵⁵*Standardiseringen I Sverige- Förlag Publishing Kataloget, 1996. Stockholm: SIS, 1996.*

⁵⁶*S.I. 1994 No.3260- Consumer Protection- The Electrical Equipment (Safety) Regulations 1994; EMC Amendment Regulation 1994 No.3080 coming into force 30.12.1994 vs. 01.05.1995.*

BS EN 50082-1:1992, BS EN 50082-2:1995.⁵⁷

The European Union and the World: MRA Agreements

The fundamental goals of the New Approach programme not only included harmonising internal Community standards, but also aligning these with international standards and certification procedures. These goals were emphasized in the 1987 Green Paper, Directive 87/95/EEC, and Council Resolution 90/C 10/01.⁵⁸ Starting in 1990, the European Community began honouring these goals through "Mutual Recognition Agreements" (MRAs) with various international players including Canada and Australia. The fundamental goal of the MRAs was to facilitate trade and to minimize the costs of doing business between countries. The MRAs established a framework for the acceptance of test reports issued in the territory of one Party to meet the requirements of the other. These proposals, once fully implemented, could see products from a Third Country such as Canada certified to European rules while still in Canada. Similarly, European products destined for a Third Country such as Canada could be certified according to Canadian rules while still in Europe. This exercise was not aimed at harmonisation since each Party retained control over its rules and processes. It was simply an agreement to "mutually recognise" the testing and certification procedures for various products including telecommunications terminal equipment

⁵⁷*BABT: Safety of Telecommunications Terminal Equipment. BABT 701 Issue. UK: BABT, ?; BABT: Telecommunications and the EMC Directive. BABT 342(t) Issue2.*

⁵⁸The full titles of these documents are: *External Aspects of Telecommunications 29 November 1989. ISEC/B31/89; Council Resolution of 21 December 1989 on a Global-Approach to Conformity Assessment, OJ No.90/C 10/01.* Please refer back to chapter 3 for broader definitions of both documents.

and information technology.⁵⁹

Agreements were reached to mutually recognise testing and certification under both the Low Voltage directive and Electromagnetic Compatibility. The Low Voltage procedures were accepted by Canada in the concluding MRA negotiations on 28 October 1996.⁶⁰ With these negotiations, both the EU⁶¹ and Canada established a framework for the acceptance of tests in Europe for electrical equipment falling within the scope of Directive 73/23/EEC and in Canada, under the scope of the "Canadian Electrical Code" and referenced in the "Provisional/Territorial Legislation".⁶² Electromagnetic Compatibility procedures were also accepted by Australia and the EU in an MRA. These agreements outlined acceptance of the

⁵⁹*Canada/USA Consultations on Mutual Recognition Agreements with the European Union*. Washington: 25 February, 1994.

⁶⁰This information is based on a Third Draft MRA agreement on 23 October 1996 between Canada and the EU. Members of the Canadian government faxed me over a series of draft agreements indicating the specific levels of agreement for telecommunication terminal equipment. I have been given permission to cite this information even though it has not been officially published and released by the Canadian and European governments.

Canada-EU MRA Sectoral Annex on Electrical Safety Sector: Third Draft Negotiations. 23 October 1996, pp.1-46.

⁶¹Parallel petitions were made by the EFTA states to participate alongside the EU in the Mutual Recognition Agreements. These were done under the guise of the EEA agreement which came into force on 1 January 1994. With this agreement the EFTA states are linked to the Community International Market and are subject to the same technical requirements and regulations governing products circulating through the EEA. Furthermore, an additional Protocol was added to the EEA agreement whereby "Third countries concerned will conclude with the EFTA States parallel mutual recognition agreements equivalent to those to be concluded with the Community." *Letter from Hannes Hafstein Chairman of the Standing Committee of the EFTA States to the Canadian Mission to the EU*. 10 October 1996, SCS 84/96.

⁶²I have obtained draft agreements for an MRA between Canada and the EU regarding EMC, however I am not sure if these have been officially approved. Nonetheless, the groundwork for these agreements and requirements for the harmonised sectors of directive 89/336/EEC were discussed at the Canada-EU Negotiations on 23 October 1996.

European testing procedures under 89/336/EEC and the Australian Radiocommunications Act of 1992.⁶³ All of these MRAs specified that no additional requirements or variations to products or certification procedures were needed for electrical products when each Party followed the agreed tests and certification outlined in the MRAs.

The concluding Mutual Recognition Agreements were a remarkable step for the Europeans in trying to achieve the goals set down in the later New Approach directives. These MRAs made standardization a global issue with globally accepted methods of testing and certifying telecommunications equipment. Moreover, they reached the essential goal which was presented in the 1987 Green Paper by Vice-President Narjes, namely:

A European Telecommunications Community which is ready and able to make a significant contribution to the development and consolidation of an open international telecommunications system. Such a system is necessary for the economic, social and therefore, political well-being of Europe and of the world.⁶⁴

In the end, with the MRAs,⁶⁵ the Europeans achieved access to important international

⁶³Once again, the copies of MRAs sent over to me from the Canadian Ministry of Foreign Affairs are draft agreements. I cannot confirm whether or not they were actually signed and made "official". Nonetheless, the Australian-EU MRA also made reference to provisions under the Low Voltage directive.

Australia- European Community MRA of Conformity Assessment Certificates and Markings: Sectoral Annex- Telecommunications Terminal Equipment. 1996.

⁶⁴*Vice President Narjes Speech, p.21.*

⁶⁵The MRAs were not the only global activities in which the Europeans were involved. Other associations such as GATT Rounds, ITU, ISO, OECD and the "Global Standards Collaboration" (GSC) meetings were avenues where the EU exchanged information on standards and telecommunications. In particular the GSC meetings included participants such as: ITU, Australian Telecommunication Standardisation Committee (ASCT), Telecommunications Advisory Council of Canada (TSACC), Telecommunication Technology Committee of Japan (TTC), Telecommunication Technology Association of Korea (TTA0) and the Committee T1-Telecommunications of the USA. These meetings dealt directly with standards information on a global basis. There have been three meetings so far- the first was held in 1994 in Australia, in 1995 the second was held at Ottawa and in 1996 the meeting

markets such as Canada, the USA and Australia on par. These undoubtedly created tremendous market opportunities for the European Community both internally and externally.

Conclusion: What does the case of standards harmonisation say about European integration

Based on interviews with Canadian and European government officials, the integration of European telecommunication standards for terminal equipment was a relative success story. Canadian officials especially felt that the harmonisation of European internal procedures made trade much easier. "Granted, Europe is not completely harmonised; however the trading environment seems far more favourable than it was 10 or 25 years ago".⁶⁶ They felt that it was much easier to obtain approvals for European telecommunications equipment through the harmonisation of European standards.

The greatest advantage of European harmonisation for Canadians was the "Mutual Recognition Agreements." The MRAs have allowed manufacturers of telecommunications equipment to build the equipment, test it according to European standards and certify it, all on Canadian soil. Furthermore, with harmonised standards, Canadian manufacturers no longer have to worry about 12 different approvals and certification procedures for terminal equipment. They can focus on one harmonised standard for given European telecommunications requirements.

was held in Korea. *Final Report of the Second of the Global Standards Collaboration (GSC-2)*, Ottawa: 6-8th June, 1995. Most of this information was also taken from an interview with William Ehrlich at DFAIT and Andy Kwan at Industry Canada.

⁶⁶This was the reaction of both Andy Kwan from Industry Canada and William Ehrlich from the trade division at DFAIT.

Ultimately, the MRAs have contributed to a greater understanding of requirements within Europe and the world at large. They have also sparked a greater interest in the European approvals procedures-- in particular the Canadians have been given observer status at ETSI meetings. This interest in observing the process of European telecommunication standards by foreign countries shows that the European telecommunications equipment industry has become an important market for Third Countries. And most importantly, Third Countries such as Canada have applauded Europe for greater harmonisation and integration of its telecommunications industry.

Conclusion:

European Telecommunications Standardization: A Success Story

At first glance, the pessimist might state that integration was not achieved in the domain of telecommunications standards for terminal equipment. After almost 40 years of legislation, the European Community still had not achieved the absolute free movement of goods and services in the telecommunications industry. Differences in national telecommunications standards were still acting as non-tariff barriers to trade, notably in the case of Austria and Ireland. As of 1996 Austria had not adopted the Low Voltage directive 73/23/EEC and Ireland had not yet complied with Community rules under the Electromagnetic Compatibility Directive 89/336/EEC.¹

However, a closer look at the integration of harmonised standards under the Low Voltage and Electromagnetic Compatibility directives, despite the non-compliance of Austria and Ireland, shows that the European integration process was in fact a real success story. With Austria's late entrance into the European Union in 1995, the European Community showed that it could expand from a mere six members in 1958 to more than double this number in 1995 (15 members), and still remain a peaceful and internationally competitive regional entity. The European Community also proved that it could continue on with

¹When I began researching this thesis topic in October 1995, I too believed that the European integration process had been a failure. Furthermore, when I first discovered reports on the integration of telecommunication standards, I was convinced that Europe, with the onset of globalization was moving back towards "Fortress Europa", instead of towards an open and internationally competitive European Community.

previous harmonisation legislation while simultaneously expanding its membership without cumbersome delays in implementation. Thus, although Austria had not complied with the requirements for the Low Voltage Directive in 1996, it had transposed and adopted Community regulations for the Electromagnetic Compatibility directive. Austria had also accepted the CE mark, all within one year of its EU membership. This instance alone proves the strength of the European integration process, and the ability of the Community's institutions to keep pace with vast changes in the EC.

Ireland's non-compliance with the Electromagnetic Compatibility Directive proved that European institutions including the European Commission and the European Court of Justice had the power necessary to enforce Community legislation and take action against non-compliant Member States. It showed to other, slower paced Member States that compliance with these directives was mandatory. The case of Ireland's non-compliance also showed that the European Commission in particular was monitoring the progress of harmonisation and was still dedicated to the EC's original aim of ensuring the free movement of goods and services across the European Community, especially in the telecommunications industry.

The integration process for terminal equipment standards was thus a success story, and not only because virtually all of the 15 Member States of the European Union had transposed and adopted necessary Community legislation. It was a success story because the European Commission was able to make the adoption of Community legislation and the implementation of Community harmonised standards an open and fully transparent pan-European process. The standardization of European telecommunications in 1996 had become a truly European activity whereby all Member States mutually recognised each other's test standards and

equipment, without imposing any of the needless national differences that had previously stifled circulation. Furthermore, these European harmonised standards went beyond the European Union's borders and were recognised by some of the world's most powerful countries. Canada and Australia were among the signatories of the "Mutual Recognition Agreements" which allowed for the global circulation of equipment based on internally recognised telecommunication standards. Thus, from this point of view, European integration was most certainly a successful endeavour within its geographic borders and moreover, its harmonised standards and testing methods were slowly being accepted across the globe.

The success of European integration in telecommunication standards for terminal equipment also adds relevance to European integration theory today. The particular case studied in this thesis reinforces Sandholtz's view in his article "Institutions and Collective Action: The New Telecommunications in Western Europe,"² that the European Commission was a solid leader in the process of European integration. With the Commission's implementation of the 1985 "New Approach" to technical standardization and harmonisation, the European telecommunications industry was able to transform and redirect the closed and inefficient "Old Approach" to standardization. Moreover, the "New Approach" generated important legislation which involved terminal equipment-- the Low Voltage Directive 73/23/EEC, the Electromagnetic Compatibility Directive 89/336/EEC, the Terminal Equipment Directive 91/263/EEC, and the CE Mark/Amendment directive 93/68/EEC were all part of the "The "New Approach" programme that created important harmonised standards

²Please refer to pages 17-19 in the Chapter 1 of this thesis for a better explanation of Sandholtz's view.

geared towards improving and facilitating approvals for terminal equipment.

The European Commission, however, was not the only force driving the integration process in telecommunications. First, the Commission itself functioned within the broader framework of the treaties, customs union, and evolving body of European Community law that was intended by its founders to lead progressively to a Europe-wide economic integration that would some day lay the groundwork for full political integration. In this sense, integration in the telecommunications sector was one element of a broader economic process occurring simultaneously across many sectors. Second, this process was also influenced and pushed forward by global developments. For example, in the case of telecommunications, the international marketplace played a substantial role in the progress of European standardization between 1958 and 1996. GATT, multinational enterprises, and powerful countries such as the USA and Japan all influenced the integration of European telecommunications.

This idea of international pressure can also be linked to integration theory by drawing on Wallace's idea of the European Community conditioned by international economic interdependence.³ As Wallace stated, "neglected differences among nations' domestic policies became exposed to international scrutiny".⁴ In this case, the whole European telecommunication standardization situation in the 1970s was revealed and it became clear that some change had to be made. This process of European integration according to Wallace was thus a "spill over" case from the rise in information, the lowering of economic barriers,

³Please refer to pages 16 and 17 in Chapter 1.

⁴William Wallace, *Regional Integration: The West European Experience*, p. xix.

and the opening of international competitor's eyes.

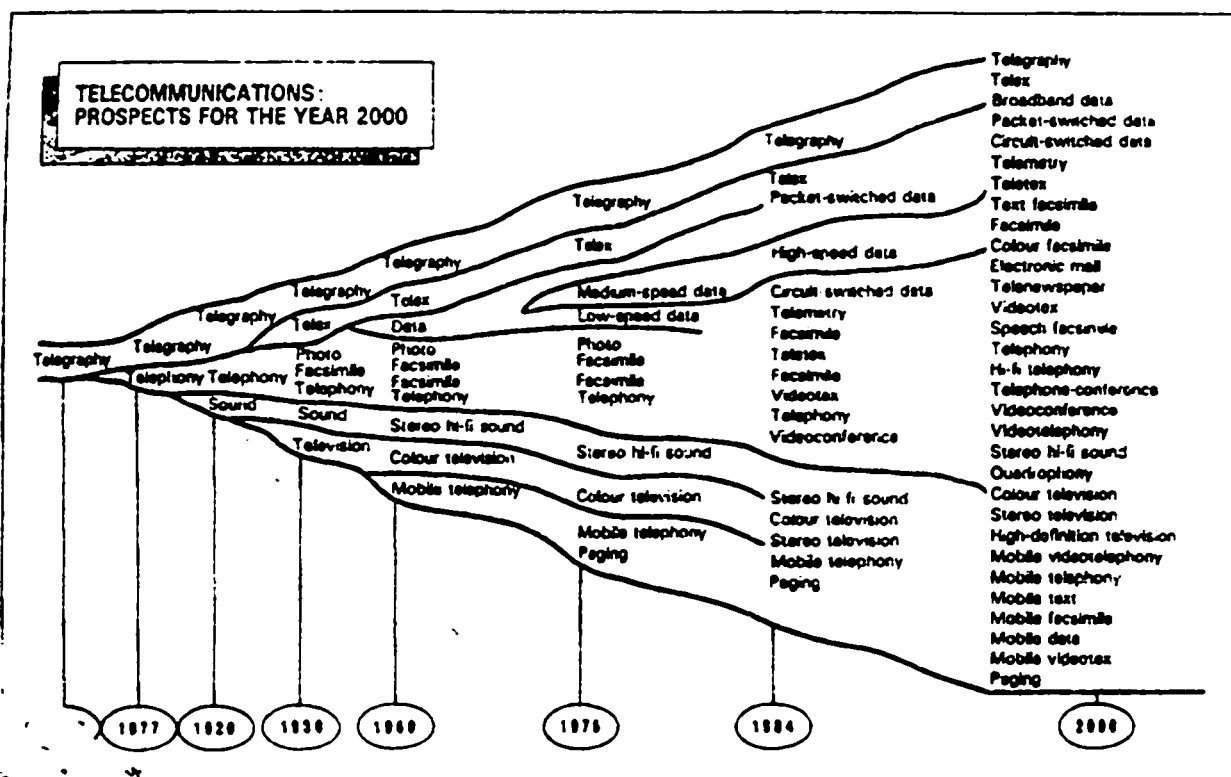
There are also two other cases of "spill over" that can be taken from the experience of European standardization and which contribute to European integration theory. Firstly, the "New Approach" to technical standardization can be used as an excellent example of an institutional initiative which "spilled over" into a whole decade of legislation geared towards harmonising the various aspects of European telecommunications. The "New Approach" started off as one piece of legislation and grew into a decade-long programme of telecommunications legislation. Satellites and radio connected telecommunications equipment were also included in some of the "New Approach" directives. Telecommunications services in general were also incorporated through deregulation of Member State monopolies. Secondly, the European harmonisation process can be said to have "spilled over" into the international domain. By 1996, important countries such as Canada were signing "Mutual Recognition Agreements" to accept equipment tested and certified to European harmonised standards within Canada, and vice versa. Hence, Canada and other MRA participants such as the USA, Australia, and the newly emerging Korea, all participated with the European Union in regional standards harmonisation, and this had in fact "spilled over" into global standards harmonisation.

This occurrence of modern "spill over" in standards harmonisation, the leadership role of the European Commission, and the internationally interdependent role of the European telecommunications industry bring out the whole relevance of European integration theory and European integration in general. In essence, the role of European telecommunications standardization between the years 1958-1996 shows that, after 40 years of the European

theorists examining the postwar integration process, integration theory is in fact still relevant and can be adapted to changes within the Community. The changes mentioned above prove this relevance. And most importantly of all, the European telecommunications standards process has shown that European integration is "an event", despite the controversy of historians. The level of social, economic, technological integration continues to increase, and the European Community will continue to grow peacefully, well into the next century.

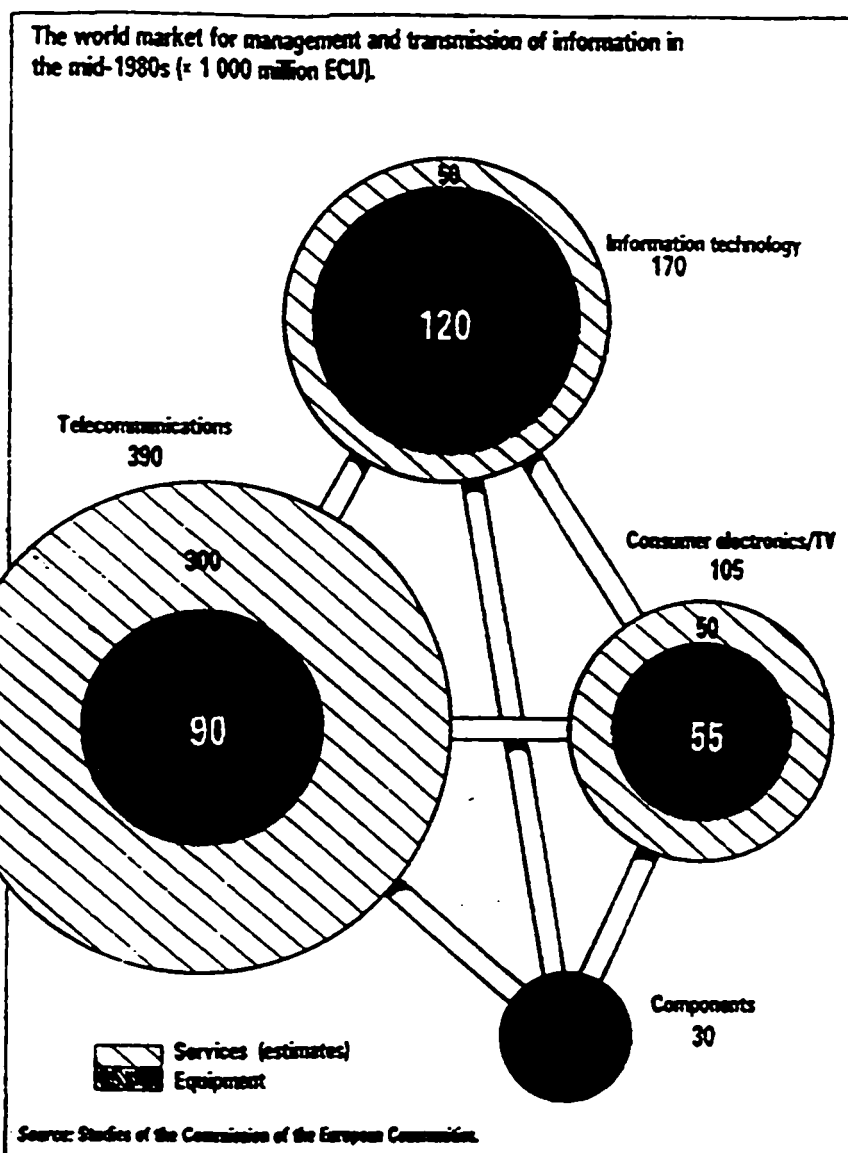
Annex 1:

A Broad Definition of Telecommunications in Europe



Green Paper on the Development of the Common Market for Telecommunications- Services and Equipment. COM(87)290, p. 22.

Annex 2



"The World Market for Management and Transmission of Information in the mid-1980s," *European File 15/88- Telecommunications. The New Highways for the Single European Market.* (European Commission, October 1988), p. 11.

Annex 3:

Important Milestones in the Creation of the European Union

- 1951 Treaty of Paris: establishes the ECSC (Belgium, France, West Germany, Italy Luxembourg and The Netherlands)
- 1958 Treaty of Rome comes into vigour joining the three European Communities: EURATOM, ECSC and EC (same member-states as in Treaty of Paris)
- 1958 EFTA is created (Austria, Denmark, Liechtenstein, Norway, Portugal, Sweden, Switzerland and the United Kingdom)
- 1962 The Common Agriculture Policy (CAP): creates a single market for agricultural products
- 1965 The Merger Treaty: sets up a single Council, Commission and Parliament for the EC, EURATOM, ECSC
- 1973 Denmark, Ireland and the United Kingdom join the EC
- 1981 Greece joins the EC
- 1986 Spain and Portugal join the EC
- 1987 The Single European Act: prepares the groundwork for the EU
- 1991 The EC meets at Maastricht and signs the Treaty on the EU
- 1992 The EU is established creating a Common Market and citizenship for its members
- 1992 The EEA is formed joining EFTA and EEC members in a larger Western European market (Switzerland is not part of the EEA agreement but keeps EFTA membership)
- 1995 Austria, Finland and Sweden join the EU
- 1997 Review of EC Treaty in Amsterdam

Glossary:

EC	European Community
ECSC	European Coal and Steel Community
EFTA	European Economic Association (Area)
EEC	European Economic Community
EFTA	European Free Trade Association (Area)
EU	European Union

Annex 4

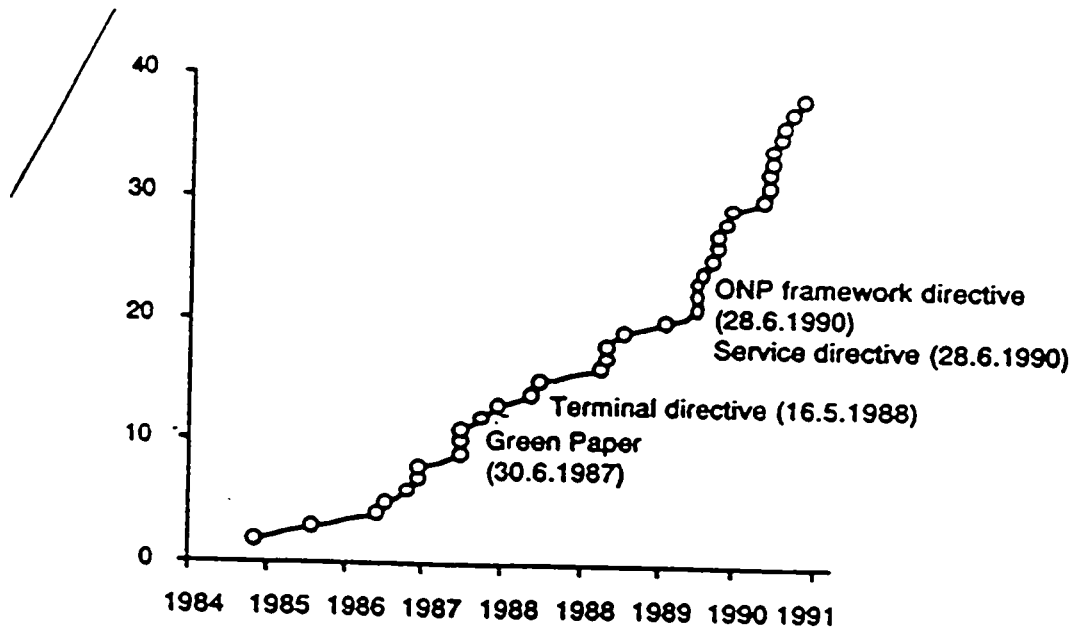


Figure 2: Decisions of Council and Commission in the Telecommunications Area

"Decisions of Council and Commission in the Telecommunications Area" in Volker Schneider, Godefroy Dang-Nguyen and Raymund Werle, "Corporate Actor Networks in European Policy-Making: Harmonizing Telecommunications Policy", *Journal of Common Market Studies* 32(1994), p. 486.

Annex 5: The Evolution of European Telecommunications

* indicates EC decisions that focus on standards

1958	Treaty of Rome
1969*	Legislation adopted for elimination of technical barriers to trade in industrial products
1973*	Low Voltage Directive 73/23/EEC
1979	GATT: Tokyo Round : Standards Code
1979*	Communication from CEC concerning Cassis de Dijon Court of Justice Case
1983*	Council of Europe Directive concerning the procedure for the provision of information in the field of technical standards and regulations
1984*	Council Directive concerning the implementation of harmonization in field of telecoms
1984-85*	Cooperation Agreements between CEPT, CEN ,CENELEC
1985*	White Paper and New Approach
1986	Council Directive on the initial phase of mutual recognition of type approval for telecommunications terminal equipment
1986*	Council Decision on standardization in information technology and telecoms
1987*	Green Paper: ETSI and Common Market for 1992
1988*	creation of ETSI
1988*	Communication from CEC to Council concerning standardization in telecoms
1988	EP Session Document on the need to overcome the fragmentation in telecoms
1989	Commission Directive concerning the External Aspects of Telecommunications -abolished exclusive rights by Member States in Telecommunications
1989*	Electromagnetic Compatibility Directive 89/336/EEC
1989*	Proposal for a Council decision on "A Global Approach to Certification and Testing"
1990*	Green Paper: Development of European Standardization
1990	creation of EOTC
1991*	Amendment to Terminal Equipment Directive 91/263/EEC
1992*	Maastricht Treaty
1993*	CE Mark Amending Directive 93/68/EEC

Annex 6

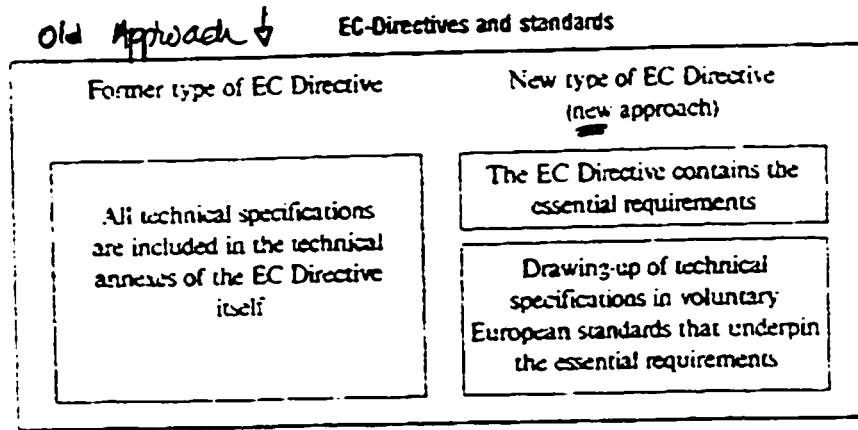
LIST 1

Standards institutions

- AFNOR (France):**
Association française de normalisation,
Tour Europe, Cedex 7,
F-92080 Paris-La-Défense
- UTE (France):**
Union technique de l'électricité (UTE),
12, place des États-Unis,
F-75703 Paris Cedex 16
- BSI (United Kingdom):**
British Standards Institution,
2 Park Street,
UK-London W1A 2BS
- BEC (United Kingdom):**
British Electrotechnical Committee,
British Standards Institution,
2 Park Street,
UK-London W1A 2BS
- DS (Denmark):**
Dansk Standardiseringsråd,
Aurehøjvej 12,
Postboks 77,
DK-2900 Hellerup 12
- DEK (Denmark):**
Dansk Elektroteknisk Komite (DEK),
Strandgade 36 st.,
DK-1401 København K
- DIN (Germany):**
DIN Deutsches Institut für Normung e.v.,
Burggrafenstrasse 4-10,
Postfach 1107,
D-1000 Berlin 30
- DKE (Germany):**
Deutsche Elektrotechnische Kommission im DIN und
VDE (DKE),
Stresemannallee 15,
D-6000 Frankfurt am Main 70
- ELOT (Greece):**
Hellenic Organization for Standardization (ELOT),
Didotou 15,
GR-Athens 144
- IBN (Belgium):**
Institut belge de normalisation, Belgisch Instituut voor
Normalisatie
29, avenue de la Brabançonne (laan)
B-1040 Bruxelles/Brussel
- CEB (Belgium):**
Comité électrotechnique (CEB):
(Belgisch Elektrotechnische Comité (BEC)),
3, galerie Ravenstein, bte 11,
B-1000 Bruxelles
- IIRS (Ireland):**
Institute for Industrial Research and Standards,
Ballymun Road,
IRL-Dublin 9
- ETCI (Ireland):**
Electro-Technical Council of Ireland (ETCI),
Institute for Industrial Research and Standards,
Ballymun Road,
IRL-Dublin 9
- Luxembourg:**
Inspection du travail et des mines,
2, rue des Girondins,
L-Luxembourg
- NNI (Netherlands):**
Nederlands Normalisatie Instituut,
Postbus 5059,
NL-2600 GB Delft
- NEC (Netherlands):**
Nederlands Elektrotechnisch Comité (NEC),
Kalfjeslaan 2,
NL-2623 AA Delft T
- UNI (Italy):**
Ente nazionale italiano di unificazione,
piazza Armando Diaz 2,
I-20123 Milano
- CEI (Italy):**
Comitato elettrotecnico italiano (CEI),
viale Monza 259,
I-20126 Milano
- * CEN:**
Comité européen de normalisation,
rue de Brederode,
Bruxelles
- * CENELEC:**
Comité européen de normalisation
électrotechnique,
rue de Brederode,
Bruxelles

"List 1", Council Directive of 28 March 1983 laying down a procedure for the provision of information in the field of technical standards and regulations 83/189/EEC, OJ L109, Vol.26, 26 April 1983.

Annex 7



The following diagram contrasts the "Old Approach" to the "New Approach" for European Standardization. In the "Old Approach" the European Commission had to pronounce all of the detailed technical aspects of a standard which were included in Community Directives. In the "New Approach", the Commission only specified the "essential requirements" needed for safety, environmental or health concerns of the individual Member States included in Community Directives. Detailed technical specifications for standards were left to competent standards organizations such as CEN and CENELEC.

"EC-Directives and Standards" in Antoine Thiard and Wilhelm F. Pfau, *Research & Development and Standardization: A Guide*, (European Commission and EFTA, 1992), p. 66.

Figure 1
Preparing a national standard

	Phase	By whom?
Preparatory steps	Request	Originator
	Supply of a proposal	Originator
	Decision to examine the file	Standardization institute assisted by any committee or competent group of experts
	Feasibility study	Experts
	Decision to include the project in the work programme	Standards committee
Standardization work	Specification of the standard	Standards committee
	Possible appointment of a group of experts	Standards committee
	Elaboration of the draft standard	Group of experts
	Final examination of the draft standard	Standards committee
	Consensus of committee	Standards committee
	Public enquiry	Standards committee
	Analysis of public enquiry	Standards committee + experts having responded
	Publication	Standardization institution

Figure 2
Preparing a European or international standard

	Phase	By whom?
Preparatory steps	Request	Member body or EC Commission, EFTA or European association
	Supply of a proposal	Requesting originator
	Decision on proposal	CEN/Cenelec technical board ISO/IEC technical committee
	Decision to include the project in the work programme	CEN/Cenelec technical board ISO/IEC technical committee
Standardization work (except in the case of 'primary questionnaire' procedure)	Specification of the standard	Technical committee
	Possible appointment of a group of experts	Technical committee
	Elaboration of the draft standard	Group of experts
	Final examination of the draft standard	Technical committee
	Vote of technical committee	Technical committee
	Vote of member bodies	Member bodies
	Publication	Member bodies of CEN/Cenelec, ISO/IEC

Note:
The 'primary questionnaire' procedure is mainly used in CEN/Cenelec when reference documents are ISO/IEC documents (see Annex B.3)

Annex 9

Table 4. TRENDS IN EUROPEAN STANDARDIZATION
1987-92

	31.12.87	31.12.88	31.12.89	31.10.90	31.12.91	31.12.92
Number of directives adopted which make reference to standards	1	3	8	14*	18*	5*
Number of standardization projects in progress at CEN/CENELEC	27	37	50*	75*	100	140
Number of technical committees at CEN	81	122	160*	200*	250	300
Number of CEN standards issued per year	39	49	150*	350*	700	1 000

* Estimates based on :
 - EC work programme;
 - French standardization programme.

Source: J. Rochard and P. Saint Raymond, *La normalisation française face à l'Europe de 1992*, Inspection Générale des Finances et Conseil Général des Mines, 1989.

Annex 10

26. 11. 93

Official Journal of the European Communities

No C 319/7

EN (*)	Reference document and title	Date (*)
AM12 TO EN 60730-2-1	IEC 730-2-1 (1989) ed 1 Automatic electrical controls for household and similar use Part 2: particular requirements for electrical controls for electrical household appliances	9. 3. 1993
60730-2-4	IEC 730-2-4 (1990) ed 1 Automatic electrical controls for household and similar use Part 2: particular requirements for thermal motor protectors for motor-compressors of hermetic and semi-hermetic type	9. 3. 1993
60730-2-11	IEC 730-2-11 (1993) ed 1 Automatic electrical controls for household and similar use Part 2: particular requirements for energy regulators	15. 9. 1992
60730-2-12	IEC 730-2-12 (1993) ed 1 Automatic electrical controls for household and similar use Part 2: particular requirements for electrically operated door locks	15. 9. 1992
AM1 TO EN 60947-2	IEC 947-2 (1989) ed 1 + Amk 1 (1992) Low-voltage switchgear and controlgear Part 2: circuit-breakers	9. 3. 1993
60947-6-2	IEC 947-6-2 (1992) ed 1 Low-voltage switchgear and controlgear Part 6: multiple function equipment Section 2 — control and protective switching devices (or equipment) (CPS)	9. 12. 1992
AM1 TO EN 60950	IEC 950 (1991) ed 2 + Amk 1 (1992) Safety of information technology equipment, including electrical business equipment	9. 12. 1992
AM2 TO EN 60950	IEC 950 (1991) ed 2 + Amk 1 (1992) + Amk 2 (1993) Safety of information technology equipment, including electrical business equipment	6. 7. 1993
AM1 TO EN 60967	IEC 967 (1988) ed 1 + Amk 1 (1991) Safety of electrically heated blankets, pads and similar flexible heating appliances for household use	9. 3. 1993
AM1 TO EN 60968	IEC 968 (1988) ed 1 + Amk 1 (1991) Self-ballasted lamps for general lighting services — safety requirements	9. 12. 1992
60998-1	IEC 998-1 (1990) ed 1 Connecting devices for low-voltage circuits for household and similar purposes Part 1: general requirements	9. 3. 1993

Amendments to the Low Voltage Directive 73/23/EEC, OJ No.C 319/7, 26 November, 1993.

Annex 11

Sample CE Mark Certification.

European Regulatory Markings

220-240VAC 50Hz 0.3A

(Product input rating 24VAC 50Hz supplied via adapter)

Apparatet maa tilkobles jordet stikkontakt. Jordet stikkontakt skal benyttes naar apparatet tilkobles datanett.

Apparaten skall anslutas till jordat uttag nar den anslutas till ett natverk.

CE The 2601, 2612, 2614 comply with the requirements of European Directives 73/23/EEC and 89/336/EEC.

CE168X

The 2602, 2603, 2613 and requirements of European Directives 73/23/EEC, 89/336/EEC and 91/263/EEC.



NS/3010/1/K/453470
(2601, 2602, 2603,
2612, 2613)

Made in: ● Canada ● U.K. ● U.S.A.

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Ungherer, Herbert and Costello, Nicholas. *Telecommunications in Europe*. Brussels: CEC, 1988.

Background Report Progress in Telecommunications Sector. Brussels: July 1995.

CENELC National Implementation of European Standards, Third Edition. Brussels: CENELEC, 1995.

Commission Communication Within the Framework of Council Directive 73/23/EEC. OJ 92/C210/01.

Commission Directive 70/50/EEC of 22 December 1969 on the abolition of measures which have an effect equivalent to quantitative restrictions on imports and are not covered by other provisions adopted in pursuance of the EEC Treaty. OJ L 13/29 19 January, 1970.

Commission Directive of March 1983 laying down a procedure for the provision of information in the field of technical standards and regulation. OJ L109/26: 26 April, 1983.

Commission Document Concerning the External Aspects of Telecommunications. ISEC/B31/98: 29 November 1989.

Commission Document Concerning Standardization in Telecommunications. COM(88)712 final.

Commission Green Paper on the Development of European Standardization. COM(90)456 final.

Communication From the Commission Concerning the Consequences of the Judgement Given by the Court of Justice on 20 February 1979 in Case 120/78 ('Cassis de Dijon') OJ C 256/2 10 March, 1980.

Conformance Testing and Certification in Information Technology and Telecommunications: Proceedings of the European Conference. Brussels: 13-15 June, 1990.

Consultation on the Green Paper on the Liberalisation of Telecommunications Infrastructure and Cable Television Networks. COM (95) 159 Final (Brussels: 3 May, 1995).

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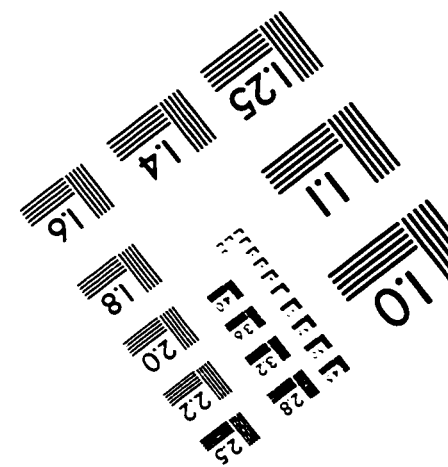
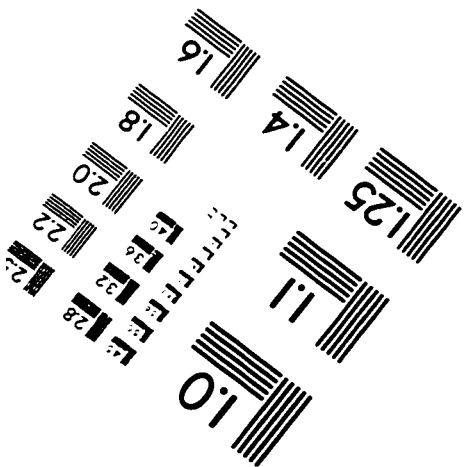
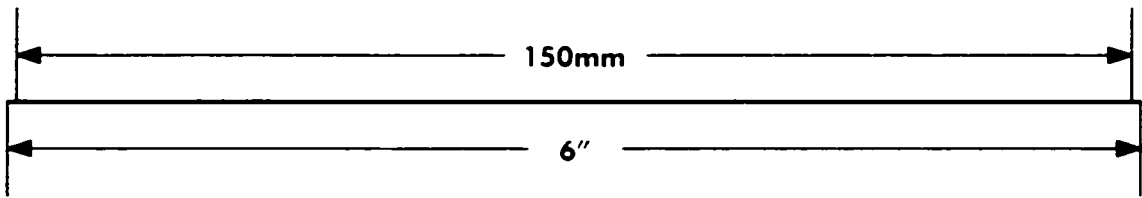
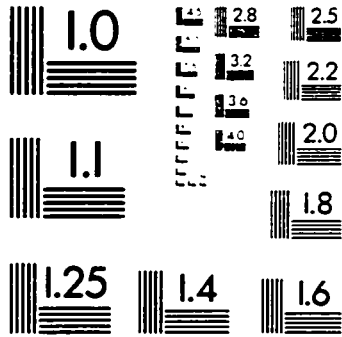
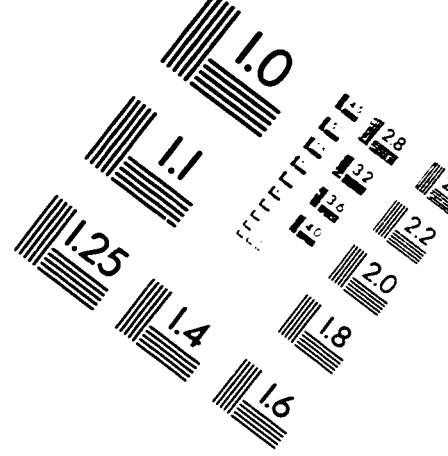
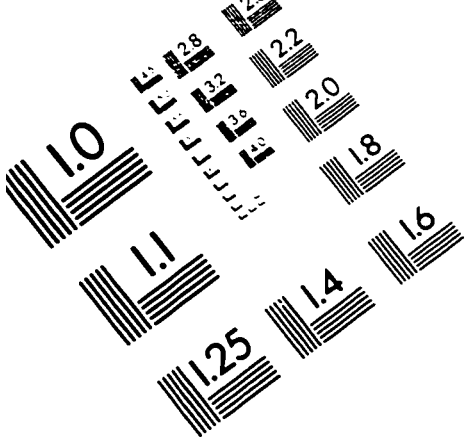
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