

Chapter 2

From Practical Science to a Practice Based Approach: A Short History of Forest Policy Studies

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2.1 Introduction

According to the handbook *Terminology of forest science, technology practice and products* (Ford-Robertson 1971), forestry is ‘A profession embracing the science, business and art of creating, conserving, and managing forests and forest lands for the continuing use of these resources’. As this definition indicates, forestry science and practice are traditionally closely related. This intimate relation dates back to the end of the 18th century:

It was at the end of the 18th century that a complete synthesis between empirical knowledge held by technically skilled practical foresters and the more theoretical concepts and teachings of the ‘Kameralisten’ (students of finance and administration) and natural scientists was achieved. This synthesis was personified by the so-called classics of forestry, who, because of their practical experiences and thorough scientific training, were in a position to unite theory and practice, and to develop the (modern) science of forestry as a coordinated whole (...) by linking intellectual and natural science knowledge with woodland empiricism (Mantel 1964, pp. 14–15).

The close ties between science and practice not only concerned practical silvicultural management, but also forest policy and organisation, as the following quote illustrates:

Pinchot synthesized the Forest Service, the American forestry profession, the foundation for American forestry training, and our Society [for Forestry]. The stuff of all these, the separate strands, were waiting to be braided into a single, strong cord (...) The Forest Service was the central strand, the profession reinforced it, the universities created trade schools to supply and support it, and the Society whipped the ends to keep the cord from fraying (Behan 1966, p. 399).

In other words, there exists a deep entwinement of science, policy and professional practice in the history of forestry that has been disentangled only recently, as we will discuss below. In view of these traditional ties, it may seem odd to propose a novel ‘practice based approach’ within forest policy studies.

Nonetheless, this book does so, and we will show that this practice based approach differs fundamentally from the practical forestry science of the early days, while respecting and renewing its interest in forestry practices and practitioners.

Forest policy has emerged as a sub-discipline in forestry science only recently: in the second half of the 20th century. Since its inception, forest policy studies has changed a great deal. During this historical process, the focus has gradually changed from normative (how to improve forest management) towards more analytical (how to explain policy processes). More recently, a critical focus has gained prominence that studies the ‘performativity’ of forest policy processes, by reflecting upon how forest policies actually ‘work’; e.g. through routine practices, through practitioners who consciously intervene and through professional fields that co-shape their behaviour. As the focus of forest policy studies changed over the years, so did the questions that scholars sought to answer: from (1) how do we improve forest policies? to (2) how do we explain forest policies? and finally to (3) how does policy actually work in practice? Each change in focus involved an important shift in thinking about how forest policy scientists interact with professional practitioners, and about the actual and desired relationship between science and practice. In this chapter we will briefly describe this historical process, starting with the roots of forest policy studies in a tradition of forestry science that dates back to the 17th century and ending by discussing critical strands that have surfaced only recently. We will do so by discussing the principles that forest policy scientists have followed at different times, the normative commitments they hold, and the questions they ask.

The chapter is structured as follows. First, the analytical framework that we use to construct a historical review of forestry science is explained. Building on Kuhn’s concept of the ‘disciplinary matrix’, this framework focuses on the normative commitments of scientists and their relationship with professional practice. Then the basic characteristics of forestry science that prevailed in the mid-20th century—at the point forest policy studies emerged—will be explored. This section briefly describes the historical roots of forestry and explains how they resulted in a specific normative foundation for conventional forestry science. The next sections describe how forest policy studies emerged and further developed. This process is further illustrated in a number of text boxes summarising certain key publications on forest policy to date. Additionally, a specific text box is dedicated to the development of forest policy studies at Wageningen University, the Netherlands.¹ Finally, the chapter concludes that the practice based approach described in this book should not be considered new wine in old sacks, or a return to the historical roots of forestry science, but rather as a new, still evolving approach to forest policy studies.

¹ Due to the authors’ predominant research focus on European and tropical forestry, in this chapter only a few references are made to forest policy studies in the Americas.

2.2 Practising Science: Kuhn's Disciplinary Matrix

A practice based approach can be understood in more than one way. At first glance, practice can be assumed to refer to the object of study: in this case the practices of different types of actors engaged in forest-related activities such as using, managing or controlling forest resources. But as indicated above, it can also be related to the practices of policy makers and forest scientists themselves. Forest policy scientists do not only identify relevant forest-related practices for study, they also position themselves in relation to policy makers and forest managers. Glück (1992) posed the following questions on the position of forest policy scientists:

- Should they advise practitioners how forest policy ought to be? Should they legitimate policy making?
- Should they describe the object 'forest policy' without value judgement, explain phenomena of forest politics and contribute towards 'enlightenment'?
- Or should they understand their position as contributing to the ideal of a more just society by critically analysing forest sectors?

As these questions indicate, scientific practices are based on a set of normative commitments. To understand and analyse such commitments, Kuhn (1970) introduced the concepts of paradigm and disciplinary matrix. According to Kuhn, the course of scientific progress is characterised by long periods of 'normal' science punctuated by a succession of scientific revolutions and paradigmatic change. Normal science involves a cumulative process, during which the basic theories of a scientific discipline are progressively articulated and extended. Scientists engaged in such normal science operate (mostly unconsciously) within a paradigm. Such a paradigm was originally characterised by Kuhn as 'universally recognized scientific achievements that for a period provide model problems and solutions to a community of practitioners' (Kuhn 1970, p. viii). These normative perspectives inform scientists what major problems are and which research approaches are legitimate and reasonable for problem-solving. He subsequently clarified the concept as referring to a 'disciplinary matrix' which covers the entire constellation of beliefs, values and techniques shared by practitioners of a specified scientific community (Kuhn 1970). This disciplinary matrix has four major dimensions: shared symbolic generalisations, shared beliefs in specific models, shared values to judge scientific endeavours and shared exemplars.

The notions of Kuhn on occasional paradigmatic change received explicit attention in forestry science at the end of the 20th century. Several scientists discussed whether the conventional approach to forestry was being challenged, and whether a paradigmatic change was needed. Many of these discussions were related to new socially-oriented developments in forest policy in tropical countries (Westoby 1989; Arnold 2001). They involved the question of whether a 'people-centred' paradigm should replace the conventional 'forest-centred' paradigm (Gilmour and King 1989; Wiersum 1999; for rebuttal see Roche 1992). Discussions of the values and beliefs underlying forestry (e.g. Bengston 1994; Kennedy et al. 1998; Scott 1998)

and the need for a new vision in both forestry science and practice (Gordon 1994) also took place in the context of forestry in the United States and Europe. Consequently, the question of whether forestry science was experiencing a cumulative process in normal science or a paradigmatic revolution (Coufal 1989) became a subject of debate. Although this debate on paradigmatic change has waned in the last decade, making place for debates on how to study forestry (see Chap. 1 of this volume), the concept of disciplinary matrix still provides a good analytical tool to assess the basic commitments underlying different approaches in forest policy studies. Moreover, it forms a useful concept to link present discussions that argue for a renewed focus on forest practices to earlier discussions on the nature of forestry science. The use of a disciplinary matrix as an analytical tool therefore allows us to offer a historical account of the normative commitments in forestry science from the time of inception of forest policy studies up until the present day.

2.3 Characteristics of Traditional Forestry Science

Conscious efforts to conserve forests for either wood production or hunting in Europe were already being made in the Middle Ages. These initiatives did not consist of systematically developed management practices, however, but instead were based on local experiences and traditions (Mantel 1964). The first efforts to systematise forestry knowledge and practices were not made until the 17th century. Two books from this period are considered landmarks in the history of forestry and representative of the normative grounding of forestry science: Evelyn's book *Sylva: or a discourse of forest trees and the propagation of timber in his majesty's dominions*, published in 1664 and Colbert's French forest *Ordinance* of 1669 (Westoby 1989; see also Glacken 1967). Evelyn's book has been described as an appeal to see forestry as a science and a field of learning. It appeals for a proper understanding of the silvicultural techniques that are needed for effective forest management. Forestry is described not just as an empirical practice, but also as requiring scientific knowledge and techniques, in addition to a respect for artisanship (Glacken 1967, p. 485). Colbert's ordinance formulated the general aims, rules and prescribed management models to ensure that France would not 'die for lack of wood', notably marine timber (Glacken 1967, p. 491). The ordinance led to the standardisation of multiple local governing systems in France and to the codification of new government laws that superseded previous rules and regulations on use and control over forest lands. It was:

an example of climax legislation, resting on law, custom, and regulation ... Its revolutionary character lay less in its departures from the past, than in its collating, sifting, rationalizing, and synthesizing the confused and miscellaneous body of custom, ordinance, and rights of use of the past (Glacken 1967, p. 491).

Together, these landmark books provided the basis for setting a disciplinary matrix for forestry science that lasted far into the 20th century. They established the basic norms for forestry as a state-controlled activity supported by scientific knowledge of silvicultural techniques. As such, early forestry science was normatively based upon maintaining or expanding a country's strategic natural resources. Moreover, forestry constituted a profession, rather than just a field of work (Zivnuská 1963). Since their inception, these basic norms have been gradually refined. Moreover, they have spread over the world as a result of colonial expansion and the establishment of colonial forestry that espoused the European forestry principles (Westoby 1989; Vandergeest and Peluso 2006a). Later, stimulated by the forestry discourses of international organisations, the state control over forests was further strengthened in the early years of independence of former colonies (Wiersum 1999; Vandergeest and Peluso 2006b).

Historically, forestry science was first considered a tool for improving and transmitting knowledge to address forest-related problems as defined by the government. It was based on strong normative commitments to maintain or expand strategic resources and had a positive orientation towards rational problem-solving. Its approach did not reflect academic (or basic) science, but rather applied or even practical science. These last two forms of science differ from academic science in respect to their purpose, the object studied and the criteria for assessing research findings (Table 2.1). The earlier descriptions of forestry involving a professional activity supported by scientific knowledge, and the description of Behan (1966) of the integrated network of forestry practitioners and forest scientists as a 'central strand' of forestry emphasise conventional forestry science's orientation on the rational solving of practical problems. As indicated by Mantel (1964), in applied sciences the criteria for evaluating research findings should be based both on science (truthfulness) and on society (practicality). However, the assessment criteria for rational problem-solving within forestry science have historically been predominantly societal, based on a governmental point of view (i.e. maintaining or expanding the national resource base). Hence, forestry science first and foremost had the character of a *practical* science (see right-hand column in Table 2.1).

That conventional forestry was foremost a practical science can be illustrated by its disciplinary matrix, which had emerged by the second half of the 20th century (Wiersum 1999):

- Shared symbolic generalisation:
 - Forestry is basically perceived as a specific form of natural resource management that is guided by the enlightenment ideals of *welfare* and *well-being* of mankind.
- Shared beliefs in specific models:
 - Forestry is conceptualised as a science and a practice of composite *interdisciplinary* nature involving three dimensions: (1) a process dimension involving the *manipulation of natural processes* in forests in such a way that

Table 2.1 Different types of science (after van Hengel 1991)

	Academic science	Applied science	Practical science
Purpose	Truthful explanation and/or prediction in abstract terms	Truthful explanation and/or prediction in options for human interventions	Rational problem-solving
Object	Idealised/abstract objects	Real world/practical objects	Real world/practical objects
Criteria	Science-based	Both science- and society-based	Society-based

biological resources are transferred to the required end-products, (2) the dimension of *technical operations* by human actors, and (3) the dimension of *state authority* in coordinating and controlling the activities of various actors (cf. van Vliet 1993).

- Professional activities are needed for problem-solving; these activities have to be guided by scientific knowledge. The basic characteristics of the sought-for solutions (or doctrines, cf. Glück 1987) were considered to be *multiple use* and *sustainability*.
- Shared values to judge scientific endeavours:
 - The basic task of forestry is to *restore the balance* between social demands on forests on the one hand and the actual state of forests on the other. The identification of the nature of time- and location-specific problems is basically politically legitimated.
 - Due to the multi-resource character of forests and the fact that many forest functions cannot be regulated through market mechanisms, forests should preferably be managed under *state control*.

In concord with these perspectives, the ideal-typical *exemplars* for forestry activities (e.g. best practices for sustainable forest management, main types of silvicultural systems, essential issues in forest policy, etc.) were developed on the basis of forestry problems identified at a national level by politically powerful groups. Professional foresters were presented as a technically trained elite in charge of the rational management of forests that were either under custodial or statutory state control. Within this disciplinary matrix, foresters’ activities mainly focused on designing and applying technical standards for forestry as a biological and technical undertaking, with timber production having primacy.

This field of early forestry science implied specific roles and relationships of professionals, scientists and policy makers. The role of the professional forester was to be engaged with the technical management of forests. The basic role of scientists was to support these practitioners with scientific advice on the manipulation of natural processes in forests and on related technical operations. And, next, such advice should contribute towards optimal practices to guarantee multi-use and sustainable forest management and conservation, in conformity with the

stipulations in governmental ordinances. These specific roles and relationships of the main actors involved also implied a specific perspective on how science and practice are conceptually related. Here, science is considered very closely related to practice, as a practical discipline that brings professional knowledge and skills to the field, while practice is seen as *praxis*, as the sphere in which scientific theories can be applied (Reckwitz 2002; van Hengel 1991).

2.4 Forest Policy Studies as Practical Science

When forest policy studies emerged as a specific sub-discipline in forestry science in the 1970s, it was initially embedded in the general scientific orientation of the latter. It was mainly oriented towards developing knowledge on optimising forest policy (Glück 1992). Forest policy studies were considered a means of providing systematic information for forest policy makers to guide their rational decision-making for solving problems that emerged as a result of increasing social demands on forest resources. The social and political setting for forest policy was considered as non-problematic, and attention focused mainly on improving forest policy design. Little attention was given to questions of how forest policies relate to socio-economic and political dynamics, or how these policies are constituted and implemented on the ground.

The first handbooks on forest policy were published in 1970 in the USA (Worrell 1970) and in 1984 in Europe (Hummel 1984). They demonstrate how the early scientific approach to forest policy followed the orientations in the conventional approach to forestry science in general. As demonstrated by the contents of the European textbook (Hummel 1984), attention was mainly paid to rationalising and systematising the design of forest policy within its historically evolved institutional setting (Box 2.1). As such, forest policy studies mainly focused on providing advice to practitioners who were involved in governmental forest policy making. This de-facto legitimated the central role of the state in forestry. The disciplinary matrix guiding these early forest policy studies strongly resembled that of conventional forestry science. The main innovation to this matrix was the identification of a new type of forestry practitioner in addition to the forest manager: the forest policy maker. This identification did not, however, fundamentally change the relationship between scientists and practitioners; it was still considered the task of scientists to support the policy makers with scientific knowledge.

Box 2.1 Early focus in forest policy studies: improving the praxis of policy design

In 1984 one of the first European textbooks on forest policy was published (Hummel 1984). The book discusses forest policy as ‘a definite course or method of action from amongst alternatives and in the light of given

conditions to guide and usually determine future decisions.’ (Ibid.: xvii). It focuses on the theoretical foundations of forest policy and the options with which policy makers are confronted in practice. The theoretical foundations should enable a policy maker

...to define the general situation, the multiple functions of forests, the measures necessary to meet the demands made on forests and the manifold legal, planning, organizing, and other actions necessary in this context.’ (Ibid.: xviii).

The book strongly focuses on issues relating to policy design. In the final chapter it is concluded that

The sensible development of forest policies to meet changing needs requires a great deal of effort by many people, and that while the final responsibility for major decisions must rest with the government, wise decisions are more likely to result if the relevant facts have been assembled and analysed and if there is a continuing dialogue between the government and all relevant non-governmental forestry interests. (Ibid.: 303).

2.5 Changes in Forest Policy

The orientation of forest policy studies started to change in the 1980s, largely in response to changes in actual forest policy in the latter part of the 20th century. The traditional focus on an ideal-type and well-institutionalised forestry sector changed drastically as a result of forestry concerns being embedded more frequently in other policy fields. Three important developments can be distinguished: (1) the linking of forestry issues to rural development, (2) the embedding of forest policy into environmental policy, and (3) the incorporation of forest policy in newly emerging governance arrangements. These changes resulted in a reorientation of professional and scientific practices.

2.5.1 *Emergence of New Forestry and Rural Development Policies*

In the second half of the 20th century, in tropical countries, the traditional tenets of professional forestry came under heavy criticism for contributing little to socio-economic development. Several international development organisations, such as the Food and Agricultural Organisation (FAO) and the World Bank, undertook initiatives to strengthen the links between forestry and rural development and advocated new forms of ‘development forestry’ (Gregersen et al. 1989; Arnold 2001). For instance, in the mid-1970s, the question came up of whether the then prevailing policy concerns on the need for land reform should not also have repercussions for forestry in tropical countries with their emphasis on state forest

lands (Arnold, pers.com). This discussion resulted in a new programme on 'Forestry for local community development'. Community forestry was identified as any forest management activity which closely involves either individual households or community groups in producing fuel-wood and other forest-related basic needs, including non-timber forest products (NTFPs), or in maintaining forests and tree plantations for providing environmental stability for food production and/or income generation (Arnold 2001). Hence, the programme introduced a new type of a non-professional forestry practitioner, and the doctrine of multiple use was extended to include 'poor people's products'. The World Forestry Congress of 1976 heralded this reorientation of tropical forest policies and provided further visions on forests contributing to rural development and local livelihoods rather than concentrating on timber resources of strategic importance to states (Wiersum 1999).

2.5.2 Embedding of Forest Policy into Environmental Policy

In the 1980s the efforts in linking forestry and development were integrated in a more general discussion on linking environmental conservation and human development. This notion was propagated in the World Conservation Strategy published in 1980 (IUCN 1980). These ideas received further global recognition as a result of the report 'Our common future' of the World Commission on Environment and Development (WCED 1987) and the UNCED Earth Summit in Rio de Janeiro in 1992. Forest concerns played an important role in these new policies. On the one hand, deforestation and forest degradation were identified as major environmental problems, and much attention was given to the need to develop a global forest convention. On the other hand, the concerns about the need to develop new socially-responsive conservation approaches mirrored the concerns that had resulted in the initiation of community forestry policies. Hence, the social development approaches in tropical forestry fitted well with the novel discourse of sustainable development in environmental policy. Therefore, in the wake of the Rio conference, forest policies became increasingly impacted by international policy discussions on the need to develop a new global forest regime which should focus primarily not on regulating the forestry sector, but instead on stimulating environmental conservation and sustainability (Humphreys 1996).

2.5.3 Incorporation of Forest Policy in Newly Emerging Governance Arrangements

As illustrated by the new policies to stimulate community-based forest management and the efforts to establish a global forest regime, forest policies became caught in contradictory trends of localisation and globalisation (Wiersum 2000). This reflected the more general shift from government to governance that evolved at that time and that implied a partial relocation of decision-making power from the nation state to international organisations and sub-national authorities (Pierre

and Peters 2000). But this shift also implied increasing the role of non-governmental actors in forest policy. Hence, the evolving forest governance process included not only decentralisation and devolution of forest policy and management responsibilities to local level organisations (as reflected by the community forestry movement), but also incorporation of non-profit, civil society organisations and market organisations in policy making (Cashore 2002; Arts and Buizer 2009). These emergent multi-actor and multi-level governance schemes (Humphreys 1996; Agrawal et al. 2008) were based both on general democratic principles and on the idea that forestry practices should be more firmly grounded in society. Consequently, increased attention was paid to the often conflicting norms in multi-stakeholder arenas that currently constitute forestry policy and management (Rayner et al. 2010). Due to all these developments, the dominant position of national governments (i.e. the state) in policy making became seriously challenged.

2.5.4 Repercussions for Forest Policies

As a result of the incorporation of tropical forestry in an enlarged policy field and the need to adjust forest policies to new social values, norms and demands, forest policy researchers started to critically scrutinise the conventional forest policies (Westoby 1989; Peluso 1992). The question arose whether the new policies demonstrated the ‘underdevelopment’ of the conventional forestry approach (Dargavel et al. 1985) and the need for a new form of professionalism (Fairfax and Fortmann 1990). But the changes in forest policy were not restricted to tropical forestry. In the more developed countries, where forestry had already been institutionalised much more strongly, changes in social values on forests and upcoming environmental concerns also required new approaches to forest policy and management (Poore 1995; Kennedy et al. 1998). New notions of how forests should be managed to provide a mix of social values for current and future generations (Koch and Kennedy 1991; Bengston 1994; Wiersum 1995) resulted in an opening-up of the traditional forest sector (Verbij 2008) and in a change in the professional identity of foresters (Kentish and Fawns 1995). Consequently, it was no longer possible to relate forest policy assessments to an ideal-type forest sector or to a predefined set of practitioners. Rather, forest policy scientists had to make sense of a variety of institutional arrangements and multiple practitioners.

2.6 From Normative to Analytical Science

The new dynamic field of changing forest values and the emergence of new governance arrangements significantly impacted on forest policy studies. Scientists were challenged to explain these policy changes rather than solve problems for a predefined sector. In endeavouring to do so, they were confronted with a greater

Table 2.2 Comparison of normative and analytical approaches in forest policy studies (after Glück 1992)

	Normative approach	Empirical-analytical approach
Objective of forest policy	Care and promotion of forestry	Regulation of conflicts of interests in the forest sector
Objective of forest policy studies	To advise and legitimate policy making	To analyse and explain forest policy, without value judgement

variety of policy actors, political processes and—sometimes conflicting—interests, values and norms. They could no longer assume that they were destined to rationally develop policy advice for an ideal-typical forestry professional who operates in a clearly bounded forest sector with a predefined set of norms and objectives. Rather they were faced with questions as to how the different actors involved perceive forestry problems, how the social field of forestry is subject to dynamic institutional arrangements, and how different perceptions of problems result in different policy options. This not only required new analytical tools for studying the changes, but also resulted in a re-evaluation of the prevailing doctrines of conventional forestry.

2.6.1 Changing Academic Orientation

Not only did forest policy studies change as a result of the emergence of new forest-related policies and the need to explain their significance; the changes also reflected new scientific orientations (e.g. Ambrose-Oji 2010). Several forest policy scholars, although foresters by training, became more and more influenced by the mother discipline of political science. For instance, in Europe, Glück (1987, 1992) questioned the scientific commitments underlying the prevailing practical science approach, and identified the need for a more analytical approach (Table 2.2). In so doing, these scholars were strongly influenced—as were most of social scientists of that time—by positivism and critical rationalism. As a consequence, an empirical-analytical approach towards forest policy emerged. Advocates of such an approach argue that the objective of forest policy studies should not be to develop and legitimise professional expertise and to advise policy makers, but rather to identify, describe and explain forest sector issues and forest policy problems, including conflicting approaches towards governing forest resources. Thus, with respect to the earlier identified question on what the role of forest policy scientists should be, the answer changed: from advising practitioners to analysing forest policy processes, explaining forest-related social and political phenomena and thus contributing towards the enlightenment of forestry scientists, professionals and policy makers. The shift from a practical approach focusing on forest policy making to an analytical perspective advocating forest policy analysis becomes clearly visible when one compares the focus of one of the first European textbooks on forest policy (Box 2.1) with one published in 2005 (Box 2.2).

Box 2.2 From forest policy praxis to forest policy analysis

In 2001 a new European handbook on forest policy was published, first in German, later in English (Krott 2005). Unlike Hummel's 1984 textbook, it does not focus principally on forest policy praxis, but rather on forest policy *analysis*. It offers students of forest policy a combination of forest sector analysis and political science concepts, such as interest, power, conflict, stakeholder, institution and policy instrument. Empirical examples are mainly drawn from Germany. Krott characterises the book as follows:

This book can be seen as a bridge between the forest sector and political science. However, it is not a simplified form of political analysis. On the contrary, its application to the field of forest policy is an endurance test for the performance of political science theory. (Krott 2005, p. 3)

He also explains:

[The] empirical-analytical orientation differs from those concepts that are based on the establishment of suitable policies. (...) This provides a clear differentiation from the previously predominant normative-ontological concept (...), [which] has many normative elements that should be avoided in favour of a scientific explanation of forest policy processes. (Ibid.: 284).

Obviously, a strong empirical-analytical programme for forest policy analysis is put forward here, with the ultimate aim being to analyse empirical phenomena on the basis of scientific theories and in so doing test them, rather than to design the best policies for practitioners. This is not to say that policy advice has been abandoned, but rather that scientists should refrain from taking normative or ideological positions and that stakeholders themselves should decide whether or not to use scientific findings.

Two leading theories within the empirical-analytical approach which continue to be dominant in forest policy analysis today are rationalism and institutionalism (Arts 2012). The former posits the axiom of the rational-strategic actor who makes choices (political or otherwise) based on the highest expected utility, i.e. from a range of alternatives he or she chooses the one which yields the highest expected return given his or her interest (Simon 1959). Although such choices might be rational at the individual level, they might produce suboptimal or even negative outcomes at the collective level (Hardin 1968). According to critics of these types of theories, this is why policies so often fail, or favour only the powerful. Institutional policy analysis, the second leading theory, claims that rational choice cannot fully explain human behaviour and political outcomes. Choices are mediated by rules, norms and beliefs, to be defined as 'institutions' (Ostrom 1990). People do not behave solely on the basis of the highest expected utility, but on the basis of what is appropriate in a certain institutional setting. For example, corruption in politics may produce the best financial return for individuals, but in

many political cultures this is simply not an option. Therefore, policy making should focus on designing the ‘right’ institutions for specific types of problem-solving. In forest policy analysis, rationalism has mainly been used in explaining conflicts of interests in the forest sector, while institutionalism has, for example, been applied to explain the (lack of) effectiveness of forest management by referring to (in)appropriate rules of the game (Ostrom 1990; Krott 2005).

2.7 Changes in the Disciplinary Matrix

The combination of forest policy change and the shift from normative to analytical science brought with it an important change in the disciplinary matrix of forest policy studies. The increased empirical attention to multiple practitioners and institutional settings resulted in a gradual expansion of the disciplinary orientation:

- From a focus solely on the professional forestry sector to a focus on a multitude of institutions and norms related to the use and management of forest resources, including communities’ and layperson’s activities.
- From a focus on forestry science as the driving force in forestry policy development to a focus on the socio-political trends driving such a development.

The new analytical focus also implied new disciplinary commitments with respect to shared beliefs in models for problem solving. The focus on ecological and technical issues was extended to include issues of social interaction and political coordination in forestry. The doctrine of state authority in delivering common goods and in coordinating activities of various forest actors was relaxed, and new premises of governance and participation were added. Due to the emerging belief in such multi-actor governance processes, forest policy scientists recognised that not only commitments and practices of forest professionals needed consideration, but also those of laypersons, communities and civil society organisations (Lawrence 2000). Much attention was given to how forestry could contribute to rural development and poverty alleviation, as well as to solving global environmental problems. This included the analysis of normative issues, such as forest rights of ordinary people and indigenous communities and environmental justice for those deprived of natural resources (Zerner 2000; Colchester 2008). Hence, the interaction between different types of forest users and managers has become part of the research agenda, and includes characteristics of participatory processes (Pimbert and Pretty 1997) and of forest partnerships (Visseren-Hamakers and Glasbergen 2007; Ros-Tonen et al. 2008).

Additionally, the sought-for solutions to forestry problems in the form of multiple use and sustainability have been re-interpreted as involving a broad range of dynamic social values rather than professional ones only (Koch and Kennedy 1991). For instance, multiple use forestry essentially involves many users who

have conflicting demands on diverse forest resources. Such conflicting demands should now be reconciled through negotiations in a governance setting, rather than through state authority. And as the interaction between different groups cannot a priori be considered as harmonious, attention should also be given to the social dynamics of forest conflicts and their negotiation and resolution (Castro and Nielson 2003; Yasmi 2007). However, the empirical-analytical approach does not merely involve a new focus on forest policy as social engineering. It also implies a diversification in the roles and relationships of professionals, scientists and policy makers. Although much research remains of an applied nature, the academic science approach has been added to the repertoire of the forest policy researcher. The role of the latter is no longer conceived of as providing advice to policy makers, but as primarily to act as an independent scientist: to objectively assess the forest sector and its dynamics, analyse its related decision-making processes, enrich forest policy with scientific concepts, and test relevant theories, such as rationalism or institutionalism. The resulting findings are, of course, accessible to professionals and policy makers, but they are no longer presented as the best professional advice. Rather, they are offered as alternative options, scenarios, or evaluations and provide the basis for democratic decision-making within a governance setting.

The new roles and relationships of professionals, scientists and policy makers imply a new perspective on how science and practice conceptually relate. In contrast to the position of the earlier normative approach the analytical science approach is more distanced from praxis. The policy praxis is considered the arena for empirical fact finding, with research results serving to explain how policy processes involve multiple interests, norms and values, consist of multi-level and multi-actor governance processes, and imply dynamic institutional arrangements. This knowledge should be independent, distanced and as much as possible value-free in respect to a priori assumptions on the ideal-typical institutional setting of forestry. It should also serve to bring enlightenment to multiple practitioners in the policy process and may result in the identification of alternative policy actions for those involved. Foremost, however, it should aim at scientific analysis and theory testing.

2.8 Emergence of Critical Policy Studies

At the end of 20th century, forest policy studies became increasingly exposed to social scientists who were neither trained as foresters nor aware of the disciplinary matrix of traditional and analytical forestry science. There were two reasons for this interest: the increasing involvement of social scientists in academic curricula on forest policy, and the growing interest in forest policy as a topic for the policy sciences in general (Arts 2012). An outcome was that scientific debates from the

social sciences were imported into forest policy studies. A crucial debate was between mainstream social sciences—of which rationalism and institutionalism are part—and critical studies. The latter is a family of theories including neo-Marxism, postmodernism and discourse theory. These theories attach great importance to the construction of meaning in science and society, and to the social, political and power processes through which such meanings are constructed, as opposed to ‘objective truth’ that can be discovered in the world ‘out there’ (Wagenaar 2011). Therefore, they all distance themselves from the positivist paradigm, which claims that: (1) reality exists independently of our knowledge (the realist position), (2) natural and social sciences are analogous in principle (the naturalist position), and (3) science should explain phenomena, generalise findings and separate facts from norms and values (the objectivist position) (Crotty 1998).

This mainstream philosophy of science is fundamentally challenged by critical studies. These reject the notion that the world exists independently of our knowledge and claim instead that scientists ‘construct’ the world rather than discover it (the constructivist position). Mediated by scientific discourse, by conceptual frameworks and by measurement technologies, certain realities are produced, while others are excluded (Berger and Luckman 1967). Moreover, scientists—being people after all—are influenced by their normative commitments and individual aspirations (the anti-objectivist position). As a consequence, knowledge, values, interests and power are all implied in scientific practice (Foucault 1972). Also, a distinction is made between the natural and social sciences, because the objects—either nature or society—are so different (the anti-naturalist position). While nature neither ‘interprets itself’ nor ‘speaks back’ to the researcher, society does. This leads to a double interpretation (or ‘double hermeneutics’; Giddens 1984) in the social sciences: in a first step the world is interpreted by people, in a second the researcher interprets their interpretations—a process which is absent in the natural sciences. Hence, the former should not uncritically follow the latter and develop its own methodologies. As a result of this debate being imported into forestry science, critical studies has been added to the repertoire of forest policy research, taking its place alongside the mainstreams of rationalism and institutionalism, while critically reflecting upon, or even breaking with, their positivist paradigm.

The new critical forest policy studies did not principally aim at contributing to better professional practices or at analysing the forest sector for itself. Instead, it critically examined the ‘forestry establishment’ in its broader political and social settings, revealing that it was not inevitable or natural, but actively created by the state, the market, their elite networks and forestry science to serve certain interests, often at the cost of local communities, livelihoods, customs and nature itself. For instance, Scott (1998) analysed how the grand schemes of the modern nation state, built upon the ideology of civilisation and progress, often produced adverse effects, or even worse, failed completely. Well-known examples are large-scale agricultural modernisation in Europe and the USA, the collectivisation in Russia and the compulsory establishment of *Ujamaa* villages in Tanzania, but Scott also gives examples from forestry. With the aim of taxation and securing strategic

resources, the early modernist states in Europe—and later in the colonies—aligned with scientific forestry to re-make the semi-natural forest systems into legible, measurable and exploitable monocultures of valuable timber trees. This radically simplified forests into a ‘single-commodity machine’ and deprived rural communities of their complex cultural, social and economic relationships with forests, wildlife and trees. Although this assessment was based on a specific interpretation of forestry, namely plantation forestry from Central Europe, thus excluding other forms, such as close-to-nature forest management or various participatory forestry schemes which have always existed besides plantation forestry, Scott’s study represents a clear example of a critical social theory interpretation of the modern forest sector.

The new critical research orientation can also be illustrated by the example of how the ‘doctrine’ of participation that emerged during the second phase of analytical forest policy studies became elaborated (Boon 1999). Earlier, most studies on participatory forestry focused on analysing ‘the who’, ‘the what’ and ‘the how’ of participation (Cohen and Uphoff 1980). For instance, they tried to objectively assess the level of participation by means of Arnstein’s ‘ladder of participation’, or explain why a certain scheme or level was appropriate to serve a certain institutional purpose (Arnstein 1969; Pimbert and Pretty 1997). The studies predominantly focused on the participation of local residents or lay people in forest policy and management and served to explain what factors impacted on their involvement in the professionally designed schemes (Charnley and Poe 2007; Lawrence 2000; Mustalahti and Lund 2010). But gradually the focus was enlarged to include the notions that participation involved engagement of professional practitioners with indigenous knowledge and laymen’s practices (e.g. Lawrence 2000) and that interfaces may occur between the normative systems of professional practitioners and laymen practitioners (Long and van der Ploeg 1989). Later, participation came to be analysed from interpretive angles too: for example, as ‘performative practice’ (Turnhout et al. 2010). In this work, participation is not conceptualised as a neutral site where, at the invitation of the state, citizens meet and discuss freely, but as a highly political site with many intended and unintended consequences. It not only includes but also excludes people, produces a certain definition of the problem at stake, and not others, and implies there are certain expectations to fulfil, such as loyal support for the resulting policy after citizen deliberation. Hence, participation is to be considered a ‘performative practice’ that creates certain participants, discourses and outcomes. At the same time, such outcomes are not predictable either, because participants exert agency and are able to renegotiate participatory roles, re-interpret issues and problems and reshape expectations. As a consequence, outcomes are neither predictable nor causally fixed, but contingent on people’s perceptions, preferences and practices as well as on the social fields in which they are situated.

Another example of the emerging critical science approach in forest policy studies is expressed in the special ‘Political theory for forest policy’ issue of the journal *Forest Policy and Economics* (Box 2.3), which can be considered the most recent overview of the field in Europe. In this special issue, the current state of the

art on theory use in forest policy studies is reviewed. It is shown that rational, institutional and critical policy analyses are all three current in the field, but with the third gaining prominence in recent years.

Box 2.3 From analytical to critical forest policy analysis

A recent special issue of the journal *Forest Policy and Economics* (Vol. 16, March 2012) on ‘Political theory for forest policy’ provides an overview of current theorising on forest policy and shows how the field has moved forward since Krott’s (2005) handbook. It consists of three sections: rational, institutional and critical approaches. The first section mainly focuses on instrument choice theory in forest policy, the second one on the analysis of institutional arrangements for forest policy and the third one on forest discourses. While the first two fit mainstream policy analysis quite well, the last section critically analyses various discursive practices in forest policy at global, national and local levels. It shows, amongst other things, how global forest media discourses are dominated by Western countries and organisations, how discursive hegemonies in forest policies of developing countries often suppress the interests of the poor and how public deliberation in green urban planning in the Low Countries is far from inclusive. All these analyses go beyond instrumental and institutional arguments to make forest policy ‘well-designed’ and ‘fit’ for the job of problem-solving, and instead show the ideological and normative biases, power inequalities, discursive struggles and multiple realities of various social groups implied in forest policy.

2.8.1 *Impacts on Disciplinary Matrix*

The new critical approach involved further changes in the disciplinary matrix of forest policy scientists. The shared symbolic generalisation of forestry as guided by the enlightenment ideals of welfare and well-being of mankind has become more critically reflected upon, or even ‘deconstructed’. Questions like: What welfare? Welfare defined by whom? Welfare for whom (and for whom not)? and Welfare at the cost of what? have become more prominent. No longer are the enlightenment ideals and their normative commitments taken for granted. More relevant is to critically assess how these commitments are created and (re)interpreted at the interface of state, market and civil society organisations in forest governance, both in rich and poor countries. The critical stance has also affected the beliefs in models that assume that forest use and management can be rationally planned on the basis of technical and social engineering. Rather, the use and management of forest resources have become interpreted to be performed in practice, and this often has unintended consequences, some of which confirm rather than remove power inequalities, in terms of access to and control over forest resources and political decision-making. To reflect upon such issues, scientists must be responsive to multiple social practices, normative systems and value conflicts.

New ‘situated’ concepts, such as agency, practice and performance have supplanted the former ideal-typical ones such as institutions and interests. The critical stance is foremost related to a dream of multiple practices of socially and environmentally responsive conservation and use of forests rather than to one idealised model of an enlightened and modernised society, as suggested by Glück (1992). It also entails researchers changing their stance from one that is rational and problem-solving to one that is more interpretive and reflexive.

Box 2.4 Forest policy research at Wageningen University

The development of forest policy research and education at Wageningen University, the Netherlands, provides a good example of the evolution in forest policy studies as described in this chapter. The first lecturer in silviculture was appointed at the then Wageningen agricultural school back in 1883. The school became a college of higher agricultural education in 1918, which heralded the start of academic forestry research and education in the Netherlands, and has been a university since 1986. In the 20th century, the scientific focus in forestry at Wageningen gradually extended from silviculture to forest management and forest economics. In 1977, forest policy was formally introduced as a subject. Since then, forest policy research has evolved rapidly. Initially, the focus was on identifying the principles for rational problem-solving in forestry (van Maaren 1984; Wiersum 1984). By the mid-1980s, the perspective had started to change (van Maaren 1993). In response to changes in actual forest policy in both tropical countries and the Netherlands, where forest policy became strongly integrated in nature conservation (Veenman et al. 2009), much attention focused on explaining these developments and assessing their relevance (Umans 1993; Wiersum 1999). In addition, rather than focusing on professional practices, increased attention was given to the nature of layperson’s practices (Wiersum 1997), and to participatory policy making and management schemes (e.g. Elands and Wiersum 2001). Later, the analytical approach was further extended by asking questions about how professional foresters make sense of their management and policy practices (Banjade et al. 2006; Hoogstra 2008), how they identify the boundaries of ‘their’ forestry sector (Schanz 1999; Verbij 2008), and how forest policies can be considered discursive institutions (Schanz 2002). In a next step, the attention to policy practice widened to include multi-stakeholder and multi-level governance processes (Arts 2006) as well as to endeavour to understand different social representations of forests and nature (Buijs 2009). Other studies focused on the role of experts and expertise in nature conservation (Turnhout et al. 2008; van Bommel 2008). All these studies indicated that processes of forest policy making are largely shaped by societal discourses and social practices, and have resulted in the gradual identification of the practice based approach, as presented in this book.

2.9 Conclusion

During the evolution of forest policy studies from a normative to an empirical-analytical approach in the 1980s, two main changes in thinking occurred regarding the relevance and scope of forestry practices. In the first place, the notion of forest policy as a governmental process, concerned with the conservation and management of strategic forest resources and executed by professional foresters, changed to a notion of multi-actor and multi-level forest governance. Within this perspective, a much larger diversity of norms and techniques for conserving and managing forests was considered than in the conventional forestry perspective. Consequently, the relevance of both professional and non-professional practitioners became recognised, as did the need to focus research on the scope of a pluriform rather than a standard set of practices for conserving and managing forests.

In the second place, the understanding of what constitute relevant forestry practices was expanded. Whereas in the conventional approach the focus was on the design of technical and organisational practices, in the analytical approach, explicit attention was also given to social coordination and conflict negotiation. It was recognised that forest policy research should not only provide knowledge for effective policy design, but also produce insights into policy developments on the ground. This included a focus on ‘new’ issues such as participation, communication and negotiation, rather than on forest-related technical and organisational schemes only. As a result of these changes, the scientific approach in forest policy research gradually shifted from practical to analytical. Although the empirical focus remained directed at objective representations of forestry practices, the scientific focus became strengthened by giving increased attention to theories from the social and political sciences rather than relying solely on models from forestry. Initially, theories to study forest policy were predominantly rationalist and institutional in nature, but at a later stage, as more and more social scientists became involved in the field, critical policy studies was added to the theoretical repertoire. This has resulted in a critical rethink of the role of the state, societal groups and scientists in the governance of forest and nature.

The practice based approach as presented in [Chap.1](#) parallels this evolution. It stands in the interpretive and critical traditions of science, i.e. considers the meanings that practitioners attach to their life-worlds as crucial for understanding their behaviour in forest policy and management. Equally, these meanings are considered to be co-shaped by the social field—the institutions, discourses, disciplinary matrix, etc.—within which these practitioners operate. This interaction between agencies and field cannot simply be reduced to rational or institutional processes, but involves what in this book is called ‘performativity’. This is, while certain logics of ‘doing and saying things’ inherent in any social field tend to reproduce practices as they evolve over time—and push people to follow daily and professional routines—their agency also enables them to improvise upon norms and rules, to do and say things otherwise than expected, or to make a difference in

routinised patterns. As a consequence, social (including policy) outcomes are rather unpredictable and only rarely match the rational optimum or the institutional fit. In line with this thinking, forest policy is understood as implying a diversity of agencies, meanings, norms, institutions, practices and fields. The realities of forest and nature governance are therefore considered complex, often messy and hard to foresee. Hence, the practice based approach is not a return to the pre-analytical, practical science approach of forestry, for which the clearly defined forestry sector and the rational problem-solving approach were key elements, but instead is a step towards a new paradigm that reorders and rethinks how science, policy and practice relate.

The above has important repercussions for the disciplinary matrix guiding forestry science. The normative commitments with respect to the importance of forests and forest resources for humanity are maintained: however, the modern notions of welfare and well-being are critically assessed, because these might mean very different things to different people in the first place and, secondly, are very unequally distributed in today's world, whatever definition is chosen. Also, the basic belief in the policy problem of the lack of balance between social demands on forests and the actual state of forests is retained. But the understanding of the process of problem identification has been adjusted and the practices of policy legitimisation are understood as being performed by the different actors in the field rather than *a priori* defined. Moreover, rather than focusing on the activities of professional foresters, the practices of different forest-related groups and other decision makers are considered, including the activities of lay people. Finally, the basic characteristics of the sought-for solutions are no longer solely focused on technical and ecological issues such as multiple use and sustainability, but also include adaptation to social change and democratic processes. As a result, the ideal-typical exemplars of relevant forest-related practices have been significantly amended.

A final caveat about assessing the repercussions of the practice based approach in respect of the disciplinary matrix of forest policy studies concerns the shared values used to judge scientific endeavours. In this chapter, the critical science orientation has been characterised as being predominantly focused on interpretation and reflexivity rather than on identifying the best operational practices for improved forest use and conservation. This new position could imply a loosening of the historical link between forest policy studies and the professional practice within the forestry sector. This would imply bidding farewell to the traditional notion of the forest sector as essentially encompassing the 'golden triangle' of forestry science, professional practice and operational training. It still remains an open question whether the practice based approach is taking such a turn, and concentrating on forging stronger links between forest policy analysis and (critical) social sciences rather than on linking scientific practice with professional and laypersons' practices. Given its emphasis on the role of practitioners in policy making, on the interaction between science and practice, on democratic governance, etc., the practice based approach has the potential to add new thinking to further shape the relationships between scientists, policy makers and professionals.

This could require the practice based approach to include relevant aspects of transdisciplinary research (Giller et al. 2008). The aim of such an endeavour would not only be to analyse practices of forest policy and management and reflect upon their meaning, but also to develop new forms of interaction between scientists, professionals and other motivated people, with the aim of actively contributing to sustainable forest use and conservation in a socially responsible manner.

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