15

Applying a Qualitative Case Study Approach to Study Values in Public–Private Partnerships

Anne-Marie Reynaers

Introduction: What Is Case Study Research?

Case study research is popular amongst social scientists, especially those interested in qualitative research (Baskarada, 2014). Simons (2009) defined case study research as ‘an in-depth exploration from multiple perspectives of the complexity and uniqueness of a particular project, policy, institution, program or system in a “real life” context’ (p. 21). The way in which case study research is applied may differ depending on the purpose of the case study (descriptive/exploratory), its design (single/multiple) and its epistemological point of departure (positivistic/interpretivist). Stake (1995) and Yin (1981) provided exhaustive comparisons of different types of case studies.

Case study research is often criticised for its low potential for enabling generalisation because, usually, only a limited number of cases are included. Case study research does not allow for statistical generalisation,

A.-M. Reynaers (✉)

Autonomous University Madrid, Madrid, Spain

e-mail: anne.reynaers@uam.es

which leads some scholars to believe that it does not contribute to the development of scientific knowledge. In that respect, Eisenhardt and Graebner (2007) argued that case study research does allow for generalisation but of a different kind. Instead of statistical generalisation, case study research allows for theoretical or analytical generalisation. Whereas statistical or sample generalisation refers to extrapolation from a randomly chosen sample to a larger population, theoretical or analytical generalisation implies that particular findings can be connected or applied to a certain theory. Findings from one case can be generalised to other cases that have not been studied but fall under the same theory.

In relation, researchers often consider multiple cases. The multiple case study approach is a variation on the single case study approach (Yin, 2009). Comparing multiple cases clarifies whether findings derived from a single case are idiosyncratic (i.e., particular to that specific case) or 'consistently replicated by several cases' (Eisenhardt & Graebner, 2007, p. 27). The adjective 'qualitative' refers to the nature of the type of data that are being analysed in the context of the cases under study. Case study research allows for the use of different data collection methods (interviewing, survey research, observations, etc.) and different types of data (qualitative, quantitative or both; Baskarada, 2014; Stake, 1995; Yin, 1981).

The remainder of this chapter describes *how one can study the safeguarding of public values in the context of organisational manifestations of the new public management (NPM) paradigm* by applying the (multiple) qualitative case study approach. Although this chapter focuses on public-private partnerships (PPPs), the research approach is suitable for studying the safeguarding of important values in many organisations, such as public sector and voluntary organisations facing external pressures and organisational change.

Public Values and New Public Management

The NPM paradigm promotes the idea of business-like government as a remedy for the apparent lack of efficiency, effectiveness and legitimacy of the public sector (Osborne & Gaebler, 1992). It has been defined as 'a

process in which business principles and private sector management techniques are transferred into the public sector in correspondence with, and based on, a neo-liberal understanding of the economy and the State' (Drechsler, 2005, p. 95).

Many Western governments have embraced private sector management techniques and values and have intensified collaboration with the private sector (Pollitt & Bouckaert, 2011). In relation to the latter, alternative public service delivery structures, such as PPPs, privatisation and contracting out, have been created and are referred to as organisational manifestations of the NPM reform (Klijn & Teisman, 2000).

Supporters suggest that public sector reforms inspired by NPM are potentially beneficial when it comes to public sector legitimacy, efficiency and effectiveness. Critical scholars, however, suggest that the expected gains are realised at the expense of other important values. For example, Box (1999) stated, 'There remains a sense that something is wrong ... something about running government like a business does not feel right' (p. 19). Literature on so-called public values delves into this assumption in further detail.

A specific niche of public values literature is concerned with the question of whether NPM allows for the safeguarding of public values such as accountability, transparency, responsiveness, responsibility and quality. Terry (1998, p. 198), for example, suggested that such values are at stake and invisible on the business-like radar screen. Likewise, Broadbent and Laughlin (2003) argued the following:

A genuine concern to many is that this private sector supplier, with its profit emphasis and necessity to give priority to its shareholders, may or may not share the same public service values that might be the case if provision was exclusively made by those in the employment of the public sector. (pp. 335–336)

In contrast to the idea that NPM might imply a loss of public values, others have argued that the exact opposite is true. Hirsch and Osborne (2000) stated that the introduction of private-sector techniques, such as performance measures and the use of output indicators, helps governments to increase transparency and accountability. Rather than public

values being at stake, Osborne and Plastrik (1998) maintained that public values are safeguarded or even strengthened.

Overall, there exist many contradictory claims about the effects of NPM on the safeguarding of public values. Whereas these different claims sound convincing in normative or theoretical terms, *empirical research* should be used to determine whether they hold. However, this is not an easy task. First, the meaning of the ambiguous concept of *public* values (rather than just values) is often unclear. Second, a clear yardstick allowing for comparison of 'traditional' and 'NPM-inspired' settings for how well each safeguards public values is often absent. Finally, it is difficult to locate and assess public values since they are neither here nor there, and unlike material concepts, values cannot be measured on an objective scale (de Graaf, 2003, p. 22).

How, then, can we study the safeguarding of public values in the context of organisational manifestations of NPM? The following section describes the application of a multiple case study approach that allows for the study of public values in PPPs. The examples provided all derive from actual empirical research on public values in PPPs (Reynaers, 2014a). A similar approach was applied by Reynaers (2014b), Reynaers and de Graaf (2014) and Parrado and Reynaers (2017, 2021).

Applying the Multiple Case Study Approach

The Importance of Context

Social science scholars have addressed the importance of considering context when it comes to studying social phenomena or concepts (e.g., Phillippi & Lauderdale, 2018). It is suggested that our perception of reality is constructed by social, cultural, historical and individual contexts (Korstjens & Moser, 2017). This means that to fully understand the nature and complexity of behaviour, processes, dynamics, outcomes and the like, researchers should consider specific contextual characteristics when describing, exploring and analysing phenomena (Benbasat et al., 1987, p. 370). Context influences the object of study and vice versa.

The importance of context has likewise been recognised in relation to the study of PPPs or other NPM manifestations (Brown et al., 2006; Reynaers, 2014a). In relation to PPPs, for example, Bovaird (2004, p. 213) argued that one must consider the institutional differences between PPPs: what goes for one PPP type does not necessarily go for others. Product type (infrastructure or public services), project duration (short or long term) and the quality of the relationship between partners (collaborative or hostile) may all differ between projects and may influence the outcomes produced by the PPPs.

Public values literature stresses the importance of context as well. Paanakker and Reynaers (2020), for example, suggested that values only acquire meaning in a specific context and that they have no objective or universal meaning. Jørgensen and Bozeman (2007) stated that ‘For any particular value, the extent to which it is embraced ... varies both across and within societies’ (p. 36).

Given that scholars of PPPs and public values stress the importance of context (e.g., Bovaird, 2004; de Graaf, 2003), the use of qualitative data (i.e., words rather than numbers) that allow us to ‘interpret and contextualize meanings from people’s beliefs and practices’ (Baskarada, 2014) seems most appropriate when it comes to studying the safeguarding of public values in PPPs. This would require a research design that allows for considering the specific contextual or institutional features of individual PPPs. The case study approach allows for just that.

Operationalisation of the Central Research Concept

To study public values, the central research concept must first be operationalised. This means one must define it ‘through a set of attributes/variables to make it measurable through empirical observations’ (Baskarada, 2014, p. 8). This first step can be rather challenging given the ambiguous nature of the public values concept.

The first reason for confusion stems from the adjective ‘public’, which suggests a distinction between public and private values. Public values are assigned to the public sector, while private values are assigned to the private sector (Reynaers & de Graaf, 2014, p. 121). However, scholars have

demonstrated that such dichotomous distinction between sectors and corresponding values does not hold true empirically (e.g., Rainey & Bozeman, 2000).

Second, the concept of public values is used empirically as well as normatively. Suggesting normatively that the public sector should safeguard certain public values is different from affirming that they do, and with respect to public values as a normative concept, it is unclear which authority would determine which values are public values (Reynaers, 2014a).

Third, public values have no objective and universal meaning. It is difficult to define what a value such as, say, transparency either looks like or should look like. Some authors have argued that public values are socially constructed and that their exact meaning and importance depend on the context in which they are used (e.g., de Graaf, 2003).

Fourth, the often immaterial character of values makes them difficult to locate and measure. Public values are not just out there (de Graaf, 2003), but they are expressed through actions, routines, preferences and attitudes (Schmidt & Posner, 1986). Values, therefore, always require further operationalisation, and differences in the way they are operationalised inhibit a single conceptualisation.

Fifth, the public values concept is used to refer to different ideas, such as public goals (e.g., the reliability and safety of public transport or energy services; de Bruijn & Dicke, 2006), process-related rules (e.g., transparency; Weihe, 2008) and moral guidelines for the public sector (e.g., honesty; van der Wal, 2008).

The ambiguousness of the public values concept does not impede conducting empirical research; rather, it requires the researcher to define very specifically what values are being considered and how these values are defined. Most research on public values considers a selection of specific values. This selection always requires some sort of justification that may be found in the prominence of a public value in the literature (Jørgensen & Bozeman, 2007). By selecting public values from the literature, it is possible to approach the theoretical debate on public values in relation to NPM with empirical findings (Jørgensen & Bozeman, 2002).

Besides their prominence in public values literature, this selection should relate to the specific characteristics of the organisational

manifestation of NPM, whether it be PPPs, privatisation or contracting out. For example, in relation to PPPs, the construction of a road is more likely to raise questions in terms of *quality* than equality given the fact that PPPs do not imply the reallocation of user rights (something that is very likely to be the case in the context of privatisation).

The public values selected for this specific study were accountability, transparency, responsiveness, responsibility and quality—all considered crucial principles or guidelines for democratic or public governance (Bevir, 2010; Jørgensen & Bozeman, 2007). A literature review on each of these values was conducted to provide a definition that would fit the context of PPPs. In relation to this fit, several academics have argued that traditional notions of, for example, accountability, should not be used as a yardstick for evaluating accountability in a non-traditional policy context (e.g., Bovaird, 2004). By means of example, transparency was defined as the availability and accuracy of information available to public servants on juridical, financial, technical and operational aspects of the project.

These first two steps, *selecting* the appropriate values to be studied and *operationalising* them, are applicable for the study of other values in different organisational settings. For example, academic literature may indicate that equality and integrity are at stake when voluntary organisations depend too much on private sector funding. Researchers who empirically want to determine to what extent this suggestion holds should define what equality and integrity ideally should look like in the specific organisational context in which these values are being studied.

Considering Context and Case Characteristics

Case study research stresses the importance of context when it comes to understanding phenomena, dynamics and the like. To make sense of the relation between context and the object of study, researchers should provide an adequate description of this context (Lietz & Zayas, 2010). Describing the natural context in which a phenomenon or specific concept is studied may differ depending on the exact research objective. In some cases, it therefore may be relevant to describe a case's historical

context, whereas other cases may require the description of a strategic, cultural or regulatory/governance context (Darke et al., 1998).

The contextual features a researcher should describe and consider depend on the scope of the research project and the research question. For example, in relation to the question of to what extent public values are safeguarded in PPPs, researchers should describe the general institutional characteristics of PPPs and, furthermore, specific project-related characteristics, such as product type, duration and the nature of informal relationships. As such, the relative safeguarding of values will be understood in relation to these characteristics. The following two sections discuss the description of the general institutional characteristics of PPPs and case-specific characteristics.

Description of the general institutional characteristics: PPPs are a type of long-term infrastructure contract (Hodge, 2010). Cooperation between the public and private sector is organised through a long-term performance contract (lasting from 15 to 30 years) that transfers the responsibility and risks for the design, construction, maintenance, operation and finance of public infrastructure and public service delivery to a private consortium. The consortium has the contractual obligation to monitor its performance. As such, the consortium creates an integrated monitoring plan that meets the procurer's approval, measures performance in terms of output specifications and links it to a financial mechanism determining the level of the monthly availability fee that the procurer owes the consortium for the services delivered. When monitoring reports show no discrepancies between output specifications and actual service delivery, the procurer pays the full availability fee. If, however, service delivery is not as agreed upon, the procurer receives a financial discount, resulting in a lower availability fee for the consortium. Such a reduction is expected to stimulate the consortium to provide the agreed-upon level of service. The procurer can conduct additional tests, the results of which—with the consortium's monitoring reports and user feedback—provide input for the meetings between the consortium and the procurer and adjustments made if necessary.

Case selection and characteristics: Whereas the previous section provided insight into the context of public values in terms of general institutional characteristics, it is equally important to describe and consider the

case-specific characteristics. In relation, researchers should decide whether to study the safeguarding of values by conducting a single or a multiple case study. The choice of whether to conduct a single or multiple case study depends on several practical factors (such as resource availability) as well as epistemological considerations (see Dyer & Wilkins, 1991). Dyer and Wilkins (1991) suggested that neither single nor multiple case studies guarantee the production of rich theoretical insights. Both approaches may therefore be appropriate. However, when academic literature provides indications that contextual differences between PPPs are important for studying the safeguarding of public values, it is logical to opt for a multiple case study approach that allows for empirically testing such assumptions. When a study emphasises the sample of various cases rather than individual cases, the research design is considered a cross-case study (Gerring, 2007, p. 20). In that case, the analysis focuses on comparing findings between cases.

What cases, then, should one select? In relation to PPPs, it is important to select cases that are different in terms of product type (referring to the specific service or infrastructure the PPP aims to deliver) or sector (either infrastructure projects or utility building projects). Considering the long-term character of PPP projects is also crucial. In relation to the latter, the public values trajectory in a certain PPP project might very well change over time. It is therefore important to include cases that have been through all three project phases, that is, the preparation phase (during which contracts and output specifications are developed), the construction phase (including design and realisation) and the operational phase (including maintenance and operation). Selecting cases that are not yet operational would only provide part of the story.

Having selected the appropriate cases, researchers should provide a description of the case-specific characteristics as these characteristics are likely to be important when trying to explain and understand the safeguarding of public values. Such a description may include dimensions such as sector, product, characteristics of the public authority, the private sector firm, contract duration and informal relations.

Data Collection and Respondent Selection

What data should be considered when trying to assess the safeguarding of public values? As mentioned earlier, it can be difficult to locate and assess public values since they are neither here nor there (de Graaf, 2003, p. 22). Unlike material concepts, immaterial concepts such as values cannot be measured on an objective interval scale that allows for determining whether the occurrence of a certain value has increased or decreased.

To assess public values in PPPs, project-related documents such as contracts, output specifications, monitoring reports and plans, internal and external evaluations and project descriptions can be considered. These documents provide information on agreements; financial, technical and juridical parameters; and the design of certain processes, and they allow the researcher to understand how public values are considered *on paper*.

Perceptions of actors involved in these PPPs allow for the study of public values *in action*. Contrasting both realities is important given the possible discrepancy between them. With respect to the perceptions of actors involved, these can be reconstructed through semi-structured interviews to establish how meaning is given to the selected values throughout the lifespan of the PPP project.

With respect to respondent selection, it is important that they all either are or have been directly involved with the project and that the selected respondents, taken together, cover the preparation, realisation and operational phases. Further, following Weihe (2008), it is necessary to include actors who work for, or on behalf of, the state as well as the private consortia. Conducting interviews with actors from the procurer's side as well as from the consortium side will result in a more complete impression of the experience with public values.

The aim of the interviews should be to uncover respondents' experiences with public values in PPPs. The interviews should progress in line with the different project phases. For example, interviewees should first be invited to reflect on the level of transparency during the preparation phase (input), followed by the construction and operational phase (process). Comparing experiences with transparency during different project phases is important since the meaning of transparency changes slightly per phase (see Table 15.1). Although Table 15.1 concerns the value of

Table 15.1 Operationalisation and interview questions concerning transparency

Type of transparency	Definition	Interview questions
Input transparency (preparation phase)	Visibility and inferability of information on the project's financial and service-level parameters, established in the performance contract and output specifications	<ol style="list-style-type: none"> 1. How did you organise the process of formulating the contractual, financial and technical specifications? 2. Were you satisfied with the amount and quality of information written down in the contract and output specifications? 3. Did you experience any problems with the amount and quality of information during the preparation phase?
Process transparency (construction and operation phase)	Visibility and inferability during the process obtained by performance monitoring and monitoring of expenses	<ol style="list-style-type: none"> 1. How did you organise the process of monitoring during the realisation and operation phase? 2. Were you satisfied with the amount and quality of information available and provided during the operation phase? 3. To what extent were the contract and output specifications useful guidelines? 4. Did you experience any problems with performance and financial monitoring during the operation phase?

transparency, similar tables can be created for other values (such as quality and accountability). This way, researchers can empirically assess what a specific value looks like in a specific PPP. Scholars should not only consider multiple cases (PPPs), but they should also consider multiple values at the same time (Parrado & Reynaers, 2017, 2021; Reynaers, 2014a).

Data Analysis

When a single case study is conducted, the analysis allows for comparing the research results with other academic studies. When researchers opt for a multiple case study approach, the data analysis may begin with a within-case analysis, meaning that each case is analysed separately (Eisenhardt, 1989, p. 540). The goal of the within-case analysis is to understand a case as a unique entity that ‘allows the unique patterns of each case to emerge before investigators push to generalize patterns across cases’ (Eisenhardt, 1989, p. 540). The within-case analysis provides sufficient familiarity with separate cases, which helps with eventual cross-case comparison.

During the first stage of the analysis, the researcher must try to grasp and report on the actual meaning that is given to public values throughout the different project phases of the PPPs under scrutiny. Thereafter, the interpretations of the findings should be compared with the assumptions about PPPs safeguarding public values found in the public values literature. As such, researchers can contrast the meaning that is given to public values in PPPs *in practice* with the *theoretical ideal type*. For cross-case comparison, the interpretation of the findings for each value should be compared with the overall findings in terms of public values followed by a search for similarities and differences between the various cases. As such, researchers can establish (causal) relationships between context and outcomes.

Qualitative data (documents and interviews) can be analysed through coding using, for example, MAXQDA or AtlasTI. This type of software allows for systematically analysing and interpreting qualitative data, which may help to increase the oft-questioned rigorousness and robustness of qualitative research (Sutton, 1997).

Conclusion

Studying the safeguarding of public values in PPPs requires a research design that allows for considering the specific contextual or institutional features of individual PPPs. The (multiple) case study approach allows for just that.

References

- Baskarada, S. (2014). Qualitative case study guidelines. *The Qualitative Report*, 19(40), 1–25.
- Benbasat, I., Goldsteinand, D., & Mead, M. (1987). The case research strategy in studies of information systems. *MIS Quarterly*, 11(3), 369–386.
- Bevir, M. (2010). *Democratic governance*. Princeton University.
- Bovaird, T. (2004). Public–private partnerships: From contested concepts to prevalent practice. *International Review of Administrative Sciences*, 70(2), 199–215.
- Box, R. (1999). Running government like a business: Implications for public administration theory and practice. *American Review of Public Administration*, 29(1), 19–43.
- Broadbent, J., & Laughlin, R. (2003). Public private partnerships: An introduction. *Accounting, Auditing & Accountability Journal*, 16(3), 332–341.
- Brown, T., Potoski, M., & Van Slyke, D. (2006). Managing public service contracts: Aligning values, institutions, and markets. *Public Administration Review*, 66(3), 323–331.
- Darke, P., Shanks, G., & Broadbent, M. (1998). Successfully completing case study research: Combining rigour, relevance and pragmatism. *Information Systems Journal*, 8(4), 273–289.
- de Bruijn, H., & Dicke, W. (2006). Strategies for safeguarding public values in liberalized utility sectors. *Public Administration*, 84(3), 717–735.
- de Graaf, G. (2003). *Tractable morality: Customer discourses of bankers, veterinarians and charity workers*. Doctoral thesis, Erasmus University Rotterdam. <https://repub.eur.nl/pub/1038/>
- Drechsler, W. (2005). The re-emergence of ‘Weberian’ public administration after the fall of new public management: The Central Eastern European perspective. *Halduskultuur*, 6, 94–108.

- Dyer, W., & Wilkins, A. (1991). Better stories, not better constructs, to generate better theory: A rejoinder to Eisenhardt. *Academy of Management Review*, 16(3), 613–619.
- Eisenhardt, K. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), 532–550.
- Eisenhardt, K., & Graebner, M. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal Archive*, 50(1), 25–32.
- Gerring, J. (2007). The case study: What it is and what it does. In *The Oxford handbook of comparative politics*. Oxford University Press.
- Hirsch, W., & Osborne, E. (2000). Privatization of government services: Pressure group resistance and service transparency. *Journal of Labor Research*, 21(2), 315–326.
- Hodge, G. A. (2010). Reviewing public–private partnerships: Some thoughts on evaluation. In G. Hodge, C. Greve, & A. E. Boardman (Eds.), *International Handbook on public–private partnerships* (pp. 81–112). Edward Elgar.
- Jørgensen, T., & Bozeman, B. (2002). Public values lost? Comparing cases on contracting out from Denmark and the United States. *Public Management Review*, 4(1), 63–81.
- Jørgensen, T., & Bozeman, B. (2007). Public values: An inventory. *Administration & Society*, 39(3), 354–381.
- Klijn, E. H., & Teisman, G. (2000). Governing public-private partnerships: Analyzing and managing the processes and institutional characteristics of public-private partnerships. In S. Osborne (Ed.), *Public–private partnerships: Theory and practice in international perspective* (pp. 252–264). Routledge.
- Korstjens, I., & Moser, A. (2017). Series: Practical guidance to qualitative research. Part 2: Context, research questions and designs. *European Journal of General Practice*, 23(1), 274–279.
- Lietz, C. A., & Zayas, L. E. (2010). Evaluating qualitative research for social work practitioners. *Advances in Social Work*, 11(2), 188–202.
- Osborne, D., & Gaebler, T. (1992). *Reinventing government: How the entrepreneurial spirit is transforming government*. Addison-Wesley.
- Osborne, D., & Plastrik, P. (1998). *Banishing bureaucracy: The five strategies for reinventing government*. Penguin.
- Paanakker, H., & Reynaers, A. M. (2020). Value contextuality in public service delivery: An analysis of street-level craftsmanship and public–private partnerships. *Public Integrity*, 22(3), 245–255.

- Parrado, S., & Reynaers, A. M. (2017). *Valores públicos y sector privado, ¿una cuestión de control o de confianza?* [Public values and private sector. A matter of control or trust?] National Institute of Public Administration.
- Parrado, S., & Reynaers, A. M. (2021). Managing public values in public-private partnerships: Do public authorities succeed? *Revista Gestión y Política Pública*, 30(1), 163–196.
- Phillippi, J., & Lauderdale, J. (2018). A guide to field notes for qualitative research: Context and conversation. *Qualitative Health Research*, 28(3), 381–388.
- Pollitt, C., & Bouckaert, G. (2011). *Public management reform. A comparative analysis: New public management, governance, and the neo-Weberian state*. Oxford University Press.
- Rainey, H., & Bozeman, B. (2000). Comparing public and private organizations: Empirical research and the power of the a priori. *Journal of Public Administration Research & Theory*, 10(2), 447–469.
- Reynaers, A. M. (2014a). *It takes two to tangle: Public-private partnerships and their impact on public values*. Doctoral thesis, Vrije University Amsterdam. <https://research.vu.nl/en/publications/it-takes-two-to-tangle-public-private-partnerships-and-their-imp>
- Reynaers, A. M. (2014b). Public values in public–private partnerships. *Public Administration Review*, 74(1), 41–50.
- Reynaers, A. M., & de Graaf, G. (2014). Public values in public-private partnerships. *International Journal of Public Administration*, 37(2), 120–128.
- Schmidt, W., & Posner, B. (1986). Values and expectations of federal service executives. *Public Administration Review*, 46(4), 447–454.
- Simons, H. (2009). *Case study research in practice*. Sage.
- Stake, R. E. (1995). *The art of case study research*. Sage.
- Sutton, R. I. (1997). Crossroads—The virtues of closet qualitative research. *Organization Science*, 8(1), 97–106.
- Terry, L. (1998). Administrative leadership, neo-managerialism, and the public management movement. *Public Administration Review*, 58(3), 194–200.
- van der Wal, Z. (2008). *Value solidity: Differences, similarities and conflicts between the organizational values of government and business*. Doctoral thesis, Amsterdam Free University. <https://research.vu.nl/en/publications/value-solidity-differences-similarities-and-conflicts-between-the>
- Weihe, G. (2008). Public-private partnerships and public-private value trade-offs. *Public Money and Management*, 28(3), 153–158.

Yin, R. K. (1981). The case study crisis: Some answers. *Administrative Science Quarterly*, 26(1), 58–65.

Yin, R. K. (2009). How to do better case studies. In I. L. Bickman & D. J. Rog (Eds.), *The SAGE handbook of applied social research methods* (Vol. 2, pp. 254–282). Sage.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.