Social Impact Assessment (SIA) from a multidimensional paradigmatic perspective: challenges and opportunities

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Abstract

The literature specialized in Social Impact Assessment (SIA) concurs that there is still much work to do in the discussion and thorough grounding of its theories and conceptual bases. The authors of this paper consider that the understanding of SIA as a *paradigm* may prove useful as a foundation on which more robust and better grounded SIA knowledge production may be built. Further, we suggest that the application of the concept of the paradigm in the terms expressed here may offer a comprehensive guide to practice in SIA studies. The paradigmatic approach to SIA is based on six basic, consecutive questions, related to each other and independent at the same time: questions in the axiological, ontological, epistemological, methodological and theoretical fields, in addition to one on governance in SIA (and in the specific project analysed). Below we explain how the two currently predominant SIA paradigms (which we have named *technocratic* and *constructivist*, following the commonly accepted terms) answer these questions. Finally, the variability of the different answer options may involve intermediate positions between the two paradigms which may also involve comprehensive ways of defining and grounding practice.

Introduction and objectives: why the concept of the paradigm is used here as a theoretical foundation and methodological guide.

In the literature specializing in SIA there is concern over the conceptual and theoretical deficiencies of the subdiscipline (Dietz, 1987; Becker, 2003; Taylor et al, 2003; Ross and McGee, 2006; Howitt, 2011). Various reasons are put forward, some of a practical nature, for example that both the format of the final reports delivered to SIA contractors and the strict deadlines within which investigators tend to work hinder the development of a thorough theoretical apparatus (Ross and McGee, 2006). Other reasons have to do with the background of SIA practitioners, the great majority of whom come from the natural and technical sciences,

which thus impedes the grounding of their work in theories of social change, as well as inhibiting analysis and understanding of the theoretical concepts dealt with (Lockie, 2001; Howitt, 2011). Also, Burdge and Vanclay (1996) point out that the social sciences have a critical and discursive orientation which contrasts with the main objective of SIA, which is to identify and predict the impacts of a project. Lastly, another set of reasons refers to the rejection encountered in some institutional and organizational contexts of critical reflection on the nature and origin of social impacts. Such reflection leads to the questioning of the structures of power and inequality which lie at the root of many social impacts suffered by local communities (Howitt, 1989; Kemp, 2011); and this conclusion may be unwelcome to certain contractors.

Some of these theoretical and conceptual shortcomings have been partly overcome through methodological approaches which, in the form of guides, lay down a series of steps or phases for the execution of SIA, and which tend to be linked to a set of specific techniques and tools (Fontes, 2014). However, there is still much work to be done in the discussion and thorough grounding of the theories and conceptual bases of SIA. This article attempts to address this theoretical challenge starting from the ideas of Vanclay, i.e. to understand SIA as a paradigm which combines knowledge, techniques and values (Vanclay, 2003b). In other words, the authors of this paper consider that the understanding of SIA as a paradigm may be useful as a foundation on which to build more robust and better grounded SIA knowledge production.

A scientific paradigm is a structure for approaching reality which establishes: 1) what set of explanations of this reality, in the form of core truths, are acceptable for the scientific community during a specific historical period; 2) what ethical or ideological assumptions underpin scientific research; 3) what problems and fields of research should be the object of attention; and 4) what set of theories, methods and techniques should be used. The concept of the paradigm would be incomplete if we did not mention Kuhn's idea of the paradigmatic revolution (Kuhn, 2012). For Kuhn, a central feature of this concept is competition. When enough internal anomalies emerge, when deficiencies in explanatory power appear, and when the social environment in which the old paradigm is inscribed changes, the latter can no longer respond to new scientific challenges. Thus alternative paradigms start to emerge, around which the scientific community's practices can acquire new coherence.

If we accept that SIA may be defined as a paradigm, it should in consequence provide us with a regulatory set of beliefs, i.e. core paradigmatic propositions in line with which social impacts are appraised, observed and analysed. Likewise, this set of beliefs should bring meanings to the processes of change set in motion by the assessed project, and to the factors (causes) which lie behind them and their consequences (impacts). Finally an SIA as a paradigm should equip us with coherently organized theories, methods and techniques: an organization deriving from the set of beliefs or principles at the heart of the paradigm. In our view every SIA should start from a series of paradigmatic principles, explicit or otherwise, previously accepted by practitioners, and leading to a choice of methodological and theoretical instruments combining to provide an internally consistent analytical perspective.

All SIA practice, "or even a discrete step of predicting social impacts" (Vanclay, 2006:10), is framed within a paradigm, whether this paradigmatic positioning is made explicit or not by its practitioners. Even those SIA practices which are presented as technical, objective, goal-oriented and politically neutral share a deep paradigmatic structure, and start out from a set of beliefs and central principles which precede every study and give it unity (Lockie, 2001).

This approach to SIA as a coherent and competitive complex is also grounded in Guba and Lincoln's analysis of the nature of paradigms (1994). According to these authors, paradigms provide answers to a set of questions basic to every scientific project. These questions and the way they are answered are interconnected, hence the answer to one conditions the answers to

all, and therefore a paradigmatic coherence must be established. For Guba and Lincoln the three main questions organizing a paradigm are ontological, epistemological and methodological. In this paper we set out to adapt this approach, adding three further questions which attempt to complete the concept of the paradigm applied to SIA: an axiological question, a theoretical question, and lastly a question on governance. All SIAs are internally articulated around a paradigm which responds to these six questions.

With this end in mind, this paper has two main objectives. Firstly we make explicit the six basic questions structuring an SIA paradigm. Secondly, the two main SIA paradigms currently in competition with each other, the technocratic and the constructivist (Vanclay, 2006), are compared, analysing how each organizes its responses to these six questions. In this way the paper presents the dominant paradigms, in order, as Smith proposes, to develop "a more critical understanding of the underlying assumptions, motivations, and values which inform research practices" (1999:20).

SIA and its paradigmatic questions

The *axiological question* refers to the system of values and ethical and moral principles underlying SIA practice. Doubtlessly this practice involves ethical issues that are very difficult to resolve, since it deals with socio-environmental conflicts in which the distribution of harmful effects is always uneven, and where the universality of values, rules and principles is always brought into question. Hence the importance of grounding the whole structure of an SIA in axiological guidelines which may serve as a guide for the decisions and judgments involved.

The *ontological question* probes the form and nature of reality. In SIA it enquires into the nature of: 1) the processes of change set in motion by the project; 2) the causes of these processes; and 3) the consequences (impacts) of the project. In other words, the answers to these three points show whether the impacts are seen as an objective reality, external to the social actors, or as a social construct.

The *epistemological question* concerns how we create knowledge of social reality, and lays particular stress on the relationship between the researcher and the situation studied. The answer to this question derives from the response given to the ontological question. In SIA these questions refer to the role of the researcher. For example, if in our answer to the ontological question we assume that the subjects have external reality, then the researcher can approach the object of study objectively and neutrally. Thus we would approach impact assessment through a technical apparatus applied and overseen by the researcher, and tending towards the production of certainties. If on the other hand we assume that reality is socially constructed, then research should include the various stakeholders in the assessment process, which will then take on a higher level of uncertainty.

The *methodological question* probes the way in which the study is organized: if a top-down, technocratic approach is to be used, or a bottom-up, participative approach. Also it investigates which data gathering and analysis techniques are to be applied. The methodological response is also dependent on the previous responses. A positivist answer to the question will bring with it the use of more quantitative methods, with an expert-based approach, while a constructivist answer will involve the use of more qualitative and participatory techniques.

The response to the *theoretical question* also stems from previous answers. If social impacts are seen in a mechanistic fashion, no powerful theoretical structure is needed. The assumption is that the community 'functions' until something 'impacts' upon it (Burningham, 1996: 21). Contrastingly, the view of impacts as the product of social conflict, set in motion by processes which are both macro- (globalization, neo-extractivist state policies, social inequalities, etc.) and micro-sociological (varying constellations of vulnerability), obliges us to

both use and produce a more robust social theory (see Howitt, 2011) in explaining the nature, origin and workings of these changes.

The last question to be answered is that *on the governance* of the SIA practice. How will the process be carried out? Who will control it and what legitimacy does the research team have? How will relationships between the stakeholders and the project be articulated? How will the inequalities implicit in all social processes be managed? What factors stemming from these inequalities can decisively affect the results of the SIA? These questions not only assume a methodological positioning (technocratic versus participatory approach), but are also based on an axiological positioning towards the issue of which ethical and political principles should guide SIA and the relationships between stakeholders.

Comparing the two main SIA paradigms

Having introduced the core questions informing the paradigmatic structure of an SIA, we can now turn to comparison of how the two paradigms competing for hegemony in the field, the technocratic and the constructivist, respond to them (Craig, 1990; Lockie, 2001; Joyce and MacFarlane, 2001; Vanclay; 2006). The technocratic paradigm is characterized in the following way: a) politics is subordinated to technical analysis (Dietz, 1987), b) privileging the collection of primarily quantitative data c) with which to determine 'objectively' the nature of impacts (Craig, 1990, in Lockie, 2001), d) under the authority and according to the knowledge of social scientists (Ziller, 2012), e) oriented towards the identification, measurement and prediction of the impacts (Esteves, Franks and Vanclay, 2012).The constructivist paradigm, on the other hand, a) acknowledges the political nature of SIA (Howitt, 2011), b) opting for multi- and transdisciplinarity, methodological triangulation, and the combination of qualitative and quantitative approaches (Domínguez-Gómez, 2016), c) and d) recognizing impacts as they are experienced and perceived by the social actors involved (Van Schooten, Vanclay, Slootweg 2003: 91), and e) orienting itself towards the social management of impacts as part of the project itself (Esteves, Frank and Vanclay, 2012). In table 1 we compare the two paradigms in terms of the responses they give to the six core questions chosen for their analysis and explained further in the second part of this paper.

	Technocratic paradigm *	**Constructivist approach** **
Axiology	Value-free, neutral, primacy of Western values	Multiple value systems
Ontology	• Mechanist • Dualist • Universalist • Functionalist • Certainty • Security	• Socially constructed reality, • Integration of nature and culture • Context-dependent • Ecologically systemic • Uncertainty • Risk
Epistemology	• Positivist • Normal science • Objectivist • Findings true • Nomothetic	• Constructivist • Post-normal Science • Subjectivist • Created findings • Ideographic

Method	• Expert-driven process • Top-down focus • Experimental/manipulative • Hypothetical-deductive • Ideally carried out at the design stage of the project • Impact identification/prediction oriented • Quantitative methods • Closed process, time-bound • Techniques • Expert knowledge	• Participatory • Bottom-up focus • Hermeneutical/dialectical • Inductive method, grounded theory • Ideally carried out throughout the project cycle • Should lead to the development of a social impact/risk management plan (SIMP) • Mixed methods • Open (ongoing) process, continuous monitoring • Concepts • Stakeholders feed in information/data
Theory	• Uncritical • Weak theoretical linkages to social theories • Does not include the variable of power • Impacts understood as external forces	• Reflexive • Strong linkage to social theories • Power relations are key to analysis • Impacts understood as complex processes
Governance	• Closed • Top-down • Technocratic • Non-participatory, non-deliberative • Oriented toward approval of the project • Oriented towards the identification of impacts • Rationalist planning • Normative, regulatory • Project sustainability	• Open • Bottom-up • Democratic • Participatory, deliberative • Oriented towards sustainability and general acceptance of the project • Deliberative planning • Contextual, negotiated • Social sustainability

Regarding the axiological question we may note an ethical gap in SIA. While a significant number of scholars place particular stress on the need for an ethical debate in the field, in SIA practice itself experts legitimize their actions with a supposedly value-free technocratic rationality (Lockie, 2001). This allegedly neutral position (O'Faircheallaigh, 1999) excludes the questioning of Western values (Rickson, Western, and Burdge, 1990) which, since they are not discussed, are imposed as universal.

However, this stance cannot conceal that SIA practice is not free from ethical and moral issues. An SIA necessarily involves appraising changes produced by a project according to a chosen point of reference. This referential factor defines the parameters of what is considered good or bad, correct or incorrect, acceptable or not. For example, is the forcible relocation of an agricultural population acceptable in the name of the "general interest?" Is it always correct to change from a traditional mode of agriculture to a productive mode using agro-industrial technology? Is it good to create employment for women in communities with entrenched patriarchal structures? It is clear that we need to consider what reference model is chosen, who has the power to choose it, and who should carry out and participate in assessment.

The development of SIA from social impact statements towards social impact management (Vanclay and Esteves, 2012: 5) has faced practitioners with wider ethical issues and debates, since they have now to deal with managing the social aspects of development, its consequences and, especially, how the latter are experienced by vulnerable groups. Thus an SIA is not now limited to a simple estimation of impact indicators, but forms part of the design of the project and puts forward alternative courses of action, sparking a debate between interests which may well be opposed.

It should be noted that every SIA has to tackle three crucial moral issues. Firstly, the dominant anthropocentric view is ethically questionable when analysing the social consequences of human impacts on ecosytemic services. Thus, when formulating alternative measures to reduce or minimize negative impacts, we should ask ourselves if nature has intrinsic rights or, to the contrary, if it should be at the service of humanity, given our supposedly superior intelligence. Another moral issue stems from the inevitably uneven distribution of impacts among the various social groups or stakeholders. In other words, what priority should the most vulnerable groups have? Finally there is a third, deontological, issue relating directly to the previous one: what rights and duties does the SIA practitioner have towards the contracting agent? To what extent should the contractual relationship condition her/his work? How is it possible to bring into harmony the interests of the hiring company and the rights of local affected populations?

Regarding the ontological question, an SIA builds scenarios to illustrate what the community will be like once it is impacted by the project or intervention. Therefore SIA is an exercise in the analysis of social change. Even when the response to the ontological question is hidden in the design of the study and its final reports, every SIA carries within it an implicit view of how reality works. Without this working model of social reality it would be impossible to approach the identification of impacts and the formulation of scenarios. Two opposing responses can be clearly seen in the SIA field. On the one hand there is the mechanist response, in which reality functions mechanically, each cause producing a particular impact (Taylor et al, 1990). This process is seen as universal and determined by laws or rules which can be observed and identified, and this lends an aura of certainty to the expert's work.

The opposing position sees reality as socially constructed through practices and social discourses (Burningham, 1996). According to this view, the cause-effect relationship is mediated by a series of contextual factors which shape the process of change into multiple forms (Aledo, García-Andreu and Pinese, 2015). Thus the degree of uncertainty is high (Meissner, 2015; Vanclay, 2002), since the identification of impacts always depends on the

context and the constantly shifting positions of the actors and their social praxis. In the last instance the ontological question leads to the discussion of the concept of an impact and what the nature of an impact is. Thus the technocratic paradigm would answer that impacts are real and objective, while the constructivist paradigm would argue that "social impact refers to the impacts actually experienced by humans (at individual and higher aggregation levels) in either a corporeal (physical) or cognitive (perceptual) sense" (Van Schooten, Vanclay, Slootweg 2003: 91), and that, therefore, they are socially constructed.

Regarding the epistemological question, the answer will depend, once again, on that given to the foregoing question. Within the technocratic paradigm, if reality is objective and its mechanistic workings are accepted, then impacts can be measured from an external position, applying the rules and instruments of positivist science (Vanclay, 2003a; 2005) (or "normal science," as Funtowicz y Ravetz (1992) call it), in search of certainties and generalizable conclusions. In this model the researcher-expert approaches the object of study from a neutral and objective position, in the certainty of reaching an outcome – a set of measurements – which can assess the impact of the project on a community, identify the positive and negative effects on that community, and suggest effective measures for mitigating, reducing or compensating for negative impacts.

The constructivist paradigm, however, recognizing that impacts are a social construct, introduces values and uncertainty (Burdge et al, 1995: 40) into the equation. These two variables force a shift towards a post-normal epistemology of science (Funtowicz y Ravetz, 1992; Bornmann, 2013). If the world is not a machine and is not ruled by mechanical laws, the production of certainties is not possible, and therefore the scientist's task is to manage uncertainty (Clift, 2014). Likewise, this paradigm assumes that projects or interventions are criss-crossed by myriad conflicting values and interests. The interests of an always heterogeneous local community confront the interests of the company, and both have a bearing on the interests of the SIA practitioners. These diverse and opposing stakeholder interests influence researchers' attitudes towards the project and the SIA on the basis of their scale of values, which is not universally shared.

Regarding the methodological question, as in the previous cases, the possible answers are conditioned by prior responses. In the technocratic paradigm, mechanist ontology and positivist epistemology drive methodology towards a hypothetical-deductive approach and the use of quantitative techniques. Assessment is carried out by groups of experts (Arce-Gomez et al, 2015) at the outset of the project. The main tool is the checklist, in more or less developed forms (Rossouw and Malan, 2007), establishing quasi-universal causal relationships between various secondary causes (created by an initial cause, the project's impact on the ground), and producing identifiable impacts (Soderstrom, 1981) which can be measured by the experts. This method is represented by methodological guides (Barrow, 1997; Sadler and McCabe, 2002) and tool-kits laying down a series of steps to follow and explaining the techniques and tools to be applied, which lead to the identification and measurement of impacts. Following these steps ensures the reliability of the results and confers scientific legitimacy on them. Therefore the objectivity of the method is accepted, along with the neutrality of the expert, who approaches the object of study as an external agent, value-free and without influences.

The constructivist position, on the other hand, puts forward participatory methodologies (Webler et al, 1995; Esteves et al, 2012), using a bottom-up approach which involves the project stakeholders in the assessment, and gives special emphasis to the inclusion of the most vulnerable and affected populations. The method is inductive and involves distancing oneself from the aprioristic assumptions governing the results of evaluation. Along with these participatory techniques, qualitative and mixed methods are used (Mahmoudi et al, 2013), opting for triangulation (Becker, 2001).This view implies that the SIA should monitor and

intervene in the whole project cycle, without limiting itself to a final numerical outcome. Briefly, if social impacts are understood as the way in which individuals experience the social changes set in motion by an intervention or project, the use of methods which take into account stakeholders' varying values, perceptions and attitudes is inescapable (Stolp, 2003).

Regarding the theoretical question, as we noted at the beginning of this paper, there exists a theoretical gap in the SIA field. Many articles published in the scientific journals acknowledge the weakness of the theoretical element in much of the discipline (Becker, 2003; Dietz, 1987), and call for a greater endeavour to underpin SIA practice with more robust theoretical and conceptual models. In other words, SIA practitioners in academia or close to it propose a strong theoretical approach to SIA, while experts exercising the profession in the marketplace employ a weak theoretical approach. Howitt remarks that conceptual and theoretical discourse is scarce in SIA (2011: 78), and that the literature generally prefers to focus on the application of methods and techniques (Barrow, 1997).The technocratic paradigm is situated on the side of this weak theoretical approach, an uncritical position which does not question the social order partially causing impacts. For example, this approach does not mention in its analyses that the impacts caused by dam-building projects on downriver populations are not only created by the hydroelectric project itself, but also by ongoing management of the power station, which responds to the interests of large-scale electro-intensive industries. The interests of these corporate élites are imposed on the interests of local populations, due to the hegemonic social position of large companies (Aledo, Garcia-Andreu and Pinese, 2015). Contrastingly, the constructivist paradigm calls for the strengthening of theoretical and conceptual frameworks. Howitt places particular stress on the need to embrace social theory dealing with issues such as power, culture, place, participation, difference and community (2011: 78).

Regarding the question on governance, responses will revolve around how the SIA will be managed and how relationships between stakeholders will be framed; also on how participants will be chosen, and what degree of influence they will have on the study (collection and analysis of data). As in previous questions, the answers are conditioned by paradigmatic coherence and are directly linked to how the axiological issues are addressed.

The answer offered by the technocratic paradigm can easily be found in the methodological guides governing praxis, as follows: a) How will the process be carried out? Answer: By faithfully following the methodological steps laid down in the guides; b) Who will direct the process and what legitimacy do they have? Answer: The investigator is legitimized by the scientific method and its correct application, offering objectivity and impartiality and resulting in certainties; c) How will relationships among stakeholders be articulated? Answer: Relationships are always unidirectional and with a single centre, the team of experts, whose neutrality will ensure the equity of the process.

Contrastingly, the constructivist paradigm proposes an extended peer community and the use of participatory techniques in order to expand the information available to the assessment. Both these responses (epistemological and methodological, respectively), combined with the constructivist concept of impacts, lead to the inclusion of a range of stakeholders in SIA praxis (Becker et al, 2003). Since the stakeholders take up varying positions, due to the different capitals they possess and their capacity to manage them, it is clear that a coherent approach to SIA governance is needed. In the constructivist paradigm every SIA is highly political (Howitt, 2011: 79): 1) because the project's objective is to intervene in the environment, and therefore all possible interests in each specific context should have their say about this; and 2) because the outcome of the SIA is in itself an object of dispute and power. Thus SIA design within the constructivist paradigm should be particularly careful not to reproduce the stakeholders' unequal positions in the social structure. On the contrary, it should

aim to create an egalitarian framework and pay particular attention to the degree of influence and vulnerability of the various stakeholders in relation to the project and the SIA itself. In order to achieve this Ansell and Gash (2008) propose a collaborative form of governance, in which the historical relationships between stakeholders, their different capitals, and their willingness to take active part in the SIA are all taken into account as starting conditions. These authors also stress the need to standardize the working of SIAs, i.e. to establish the basic rules of the game in terms of the stakeholders' positions, the value of their participation and how relationships between them are organized. Lastly, the SIA management team should hold sufficient legitimacy for all stakeholders, and should lead the SIA process in a way that is acceptable to all parties.

Conclusions

In view of the above discussion, we can affirm that the SIA field brings together all the requisites of a true paradigm. Also we have seen that there is not only one paradigm in SIA studies, but that the distinct responses to the six questions put here determine the paradigm shaping SIA practice. Thus the SIA paradigm emerges from the system of values implicit in the work (axiology), how reality and its workings are understood (ontology), how the researcher approaches this reality in order to know it (epistemology), how the study objectives are to be achieved (methodology), how theory will be invoked to explain the processes analysed, and also what importance it is given (theory), and lastly how the existing power relations between stakeholders will be managed within the SIA and, by extension, the project itself (governance).

In this paper the two prevailing paradigms found in operation in the SIA field are defined and compared. They put forward radically different answers to each of the questions. However, the possible variations in responses to the six questions also imply significant variations in the definition of the paradigms implicit in SIA practice. Thus for example, we could add to the list both post-positivist and critical theory paradigms, as do Guba and Lincoln (1994). The post-positivist paradigm, according to their definition, may be understood as an attempt to integrate the two paradigms discussed here (Lane, 1997; Lockie, 2001: 284; Sala, 2013). That of critical theory, which we could call an *advocating* or *political* approach (Freudenburg , 1986; Craig, 1990; McGuigan, 2015), bears methodological and epistemological similarities to the constructivist paradigm, but with different ontological bases. This paradigm assumes, in an aprioristic manner, that a development project is an act of colonization or exploitation, an exercise of power based on the historical construction of an unequal and unjust social reality; and therefore the paradigm explicitly takes the side of the most vulnerable.

Lastly, we would argue that by systematizing the responses to the questions we have cited, a practical guide for carrying out SIAs can be created. We have seen that systematic answers to the six questions define theoretical-practical modes of tackling SIA field work. The relationships between the six questions, their imbrication and mutual dependency, their paradigmatic coherence, define in the end a whole system of research into impacts and risks, from its most fundamental aspects to its most technical or applied. In our view this model is useful not only to the practitioner, but also to the developer who designs the project or who wishes to assess its socio-environmental impacts. It may also be of use to the politician, enabling decisions on development projects to be grounded in a more comprehensive and multidimensional approach; an approach which, as we noted in the introduction to this paper, not only sets out to address the theoretical challenges identified in the specialized literature on SIA, but which also tackles methodological and technical issues by grounding objectives and processes in the values, understanding and clear appraisal of the socio-environmental reality studied.

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