Gauging Universities for Sustainability: Action Research as a Tool for Assessing and Influencing Organisational Transformation

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> *A sustainable university is "A higher educational institution, as a whole or as a part, that addresses, involves, and promotes, on a regional or global level, the minimisation of negative environmental, economic, societal, and health effects generated in the use of their resources in order to fulfil its functions of teaching, research, outreach and partnership, and stewardship in ways to help society make the transition to sustainable life-styles"*
>
> Velazquez et al. (2006).

Abstract

This contribution presents how the novel social scientific methodology of Action Research (AR) can assess campus-driven initiatives to see how to enhance governance for sustainability at Higher Education Institutions (HEI's). Maastricht University (UM) in particular has a unique form of maintaining the student-driven, bottom-up component, and has pioneered in recent years in student activism for sustainability. Its Green Office's (GO) mandate is to manage the sustainability portfolio of UM in the areas of research, education, operations, governance and community engagement, in a student-driven staff-supported manner. The drive was to see how AR can be used as a tool to assess and influence organisational transformation towards sustainability at an HEI. Other theories and lenses used included an organisational change management approach to embedding sustainability, assessment strategies from CSR, and insights from behavioural change. AR provides a moment for reflection after a full cycle—diagnose, plan, act, and evaluate action—has taken place. This paper represents the outcome of the reflection of this continuous process of transformation after one year of engagement by the researcher, with the focus on the internal causal mechanisms from which an organisational transformation

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gains traction and propagates. It was chosen as the approach best-suited for answering the primary research question of "how do universities manage their organisational transformation towards sustainability and how can this be effectively achieved", especially against the backdrop of university's unsustainability so as to enable the co-production and design of solutions at the organisational level. AR also requires a lot of 'conventional' research—such as the construction of an analytical framework, interviews with key stakeholders and a content analysis of documents produced by the GO and UM—before any meaningful reflection on interventions, the core of AR, can take place. In the context of organisational transformation towards embedding sustainability at UM, AR has enabled the researcher to come closer to seeing how operational, social, and governance processes take place up close, which conventional 'desk' research might not have otherwise gained access to. The researcher and the participants/co-researchers of the study have been able to learn from each other and from the initial findings of interventions and conceptual framework used to analyse organisational transformations towards sustainability. The AR 'team' therefore functions at the interface of the internal properties of the university and its external environment at the societal or regime level, using this approach to forge collaborative partnerships within organisations and with local stakeholders. It is hoped valuable lessons can be gleaned for others seeking to use the AR approach to study transformational processes that enhance the role of universities for sustainable development against the global imperative created by UNESCO's Global Action Programme of Education for Sustainable Development and the UNSDG's.

1 Introduction

This chapter presents contemporary, state-of-the-art applications of how social science theories, particularly action research (AR), might help overcome campus sustainability challenges. It illustrates the diversity, reliability and adaptability of social sciences in an interdisciplinary research project being undertaken here at Maastricht University (UM) in close collaboration with its Green Office (GO). GO is mandated to manage the sustainability portfolio of UM in the areas of research, education, operations and community engagement, in a student-driven staff-supported manner.

The aim is to show how AR can be used as a tool to assess and influence organisational transformation towards sustainability at an HEI. It brings to the fore

the role of researchers in AR projects, potential downfalls and challenges outlined by the author, so that others might learn from this experience (and those of other examples of using AR in studying transformational processes). It takes a methodological stance so that future projects of similar calibre can utilise this social science approach to overcome sustainability challenges on campus.

With respect to the case of UM, AR is being used to investigate its organisational transformation towards embedding sustainability. This is a running application of a novel methodology of the social sciences that seeks to overcome such campus challenges as institutional inertia, decentralisation, a lack of effective communication, missing 'nodes' of liaison in a bottom-up and top-down participatory governance structure, and practices associated with commercial logic and management at universities.

The theoretical perspectives taken in this research project draw from the interdisciplinary approach of sustainability science, and more specifically behavioural science, organisational change management, socio-ecological systems, corporate governance and CSR, and sustainability in higher education. Going into more depth of each of these is beyond the scope of this chapter, however it is considered relevant to look at how action research is useful for solving complex campus sustainability challenges, and therefore on the emerging 'discipline' of sustainability science.

2 Why Do Universities Need to Become More Sustainable?

Universities have been lagging behind other sectors in terms of embedding sustainability into their organisational structures (Lozano 2011). Much research has been undertaken into the 'what' of corporate responsibility, sustainability reporting and accounting, and organisational transformation (Aras and Crowther 2008, 2009; Clark and Master 2012; Eccles et al. 2012; Lozano 2006; Zadek 2006), yet relatively little has been performed on the 'how' (Shelley 2013), and fewer still for a specifically operationalised integration of sustainability into the core business of higher education institutions (HEI's).

Progress has been slower than expected across the departments, faculties, facilities and operations at HEI's and there is a definite lack or "clear orientation on exactly what a sustainable university should be" (Velazquez et al. 2005). Considering their unique position and legacy in society, as well as their significant capacity for innovation and the honest brokerage of knowledge at the boundaries of science, policy and politics (Pielke 2007), universities have a unique role and responsibility towards society and environment. Global trends nonetheless encourage a new trajectory for HE post Rio+20, especially with the Higher Education Sustainability Initiative (HESI) commitments playing an enabling role in mobilising HEI's to ensure a sustainable future (Simon and Haertle 2014).

To integrate principles and practices associated with sustainability into the whole portfolio of activities at HEI's is a tremendous opportunity to prepare the entire campus community to be better equipped to make decisions for a future that rapidly becomes more complex, dynamic and uncertain (Yarime and Tanaka 2012, Glasser et al. 2005). With respect to education (as part of the core-business of an HEI that also comprises research), it should prepare students for the transformational challenges the world will face in the near future. These are in response to what the International Geosphere Biosphere Programme calls the great acceleration (Steffen et al. 2004): the collection of exponential trends of human development that shift our planetary influence to that of a geological force in its own right.

This plays against the backdrop of a plethora of charters and declarations signed by global networks of HEI's to cement their commitment to the global transition toward a more sustainable society, such as the Talloires Declaration (1990), the Copernicus Charter (1994), the Handvest Duurzaamheid HBO1 (1999), Agenda 21 (1992), and the most recent UN Decade for Education for Sustainable Development (2005–2014) (Boer 2013; Sylvestre et al. 2013; Lozano and Young 2013). HEI's need to become more sustainable yet they claim to find it difficult to meet their social and environmental responsibilities. Many institutional barriers exist: such as decentralisation, a lack of environmental literacy, and missing participatory democracy. The boundaries between public and private have become increasingly blurred; managerial logics have predominated leading to a 'marketization' of HE (Howells et al. 2014). Hence universities must justify how they contribute to solve ecological, social and economic challenges of unsustainability with the knowledge that they produce and implement in research and education.

Transformation towards sustainable development requires a vision and goals (Zeijl-Rozema Van 2011). Since 2008, UM has fulfilled this teleological requirement through its mission, roadmap and sustainability goal-setting. However, according to Jenssen (2012), not only the management of a HEI should be committed to sustainability, but the whole university community should be involved and mobilised in a participatory approach, in a manner which embodies a balance between top-down and bottom-up approaches for organisational change that multiplies benefits (Fraser et al. 2006). Participatory processes have shown a particular appropriateness for application from theory to practice in the higher education sector because of their benefits to the academic community, towards fostering sustainable development, raising awareness about sustainability between varied actors at universities, as well as increasing the standard and quality of the dialogue between them. However there still remains a significant challenge that the institutional governance structure would have to change to accommodate these changes (Disterheft et al. 2014).

The dynamics of how this change in institutional governance, or in other words how the process of transformation takes place, are not yet well understood (Hoover and Harder 2014). This calls for greater focus on processes and departments that aim to embed sustainability at HEI's (Stephens and Graham 2010). According to Yarime et al. (2012), this means taking into account the deep structure and inter-personality of a university, all its sub-systems, facilities and departments,

including their interdependencies in a systemic and dynamic understanding. This represents an emerging paradigm in institutional governance, that goes beyond the traditional 'third-mission' (Trencher et al. 2013) of an entrepreneurial, knowledge producing, and technology-innovating institution.

Accordingly, AR was chosen as the approach best suited for this research project against the backdrop and problem of unsustainability identified in universities, so as to enable the co-production and design of solutions at the organisational level. At the macro-level, networks of universities that are transforming themselves to be more sustainable might then augment societal transformations that grow as global trends, complemented by the launch of the Future Earth initiative, and the renewal of the UNDP's Millennium Development Goals after 2015 into Sustainable Development Goals in Paris 2015.

3 Being the Insider in Sustainability Transformations

Reflecting on the theories and models that support the choice of AR in the case of insider academic research, it is apt to mention the paradigms that have influenced its evolution. One of these is Sustainability Science, which implies that complex concepts requires equally complex framings, bringing temporal and spatial dimensions into account as well as the stakeholders involved (Martens 2006). It refers to a societal process of changes towards a desired quality-of-life now and in the future; a pluralistic approach that deals with diverse actors at multiple levels, creating an integrated vision built on shared concern towards a shared solution that resolves trade-offs along the way (Zeijl-Rozema Van et al. 2008; Zeijl-Rozema Van 2011). It demonstrates a variety of "new" approaches or lenses for understanding complex sustainability problems: post-normal science, mode-2 science, sustainability science, action research, and integrated assessment amongst others (Funtowicz and Ravetz 1993; Waterman et al. 2001; Rotmans 2006). A description of some challenges of Sustainability Science is made by Zeijl-Rozema (2011) in Table 1.

The growth of sustainability science as a fully-fledged approach operating at the borders of science, policy and politics (Trencher et al. 2014) hence sees AR as a legitimate manner of solving challenges characterised below.

Table 1 A typology, problem-handling process and description of some challenges of sustainability science

Type of problem	Complex, societal, decision stakes high, disputed values, systemic uncertainty high
Knowledge production	Inter-, trans-disciplinary
Goal	Contribute to decision-making by improved problem understanding, structuring complexity and bringing about societal change
Challenges	Dealing with: long-term developments and short term actions, spatial scale levels, uncertainty and risk, co-production of knowledge, combining qualitative and quantitative approaches, integrating knowledge, perspectives and interests, structuring complexity, quality assurance of results

Daly (2006) sees sustainability "as a way of asserting the value of longevity and intergenerational justice, while recognising morality and finitude" illustrating the imperative that the youth of today have a stake in the future state of the world that is left to them. Against the backdrop of globalisation, climate change, infectious diseases, biodiversity loss, water scarcity, social immobility, inequality, ecological deterioration, and a void of trans-boundary governance on a global-level, the potential universities possess to prepare the youth for such a future is inimitable. This mission embodies the principles of intergenerational justice, socio-ecological equilibrium, and ensures that social and environmental externalities are accounted for so that no one human group has to bear the costs of production and consumption of another without compensation. Paradigmatic changes in and of science change as a result of external perturbation and crisis in response to the aforementioned challenges (Kuhn 1996).

Another appropriate lens is adaptive management, a part of the paradigm of reflexive governance and systemic change expressed by Voß and Kemp (2006). The central assumption is that surprise is inevitable in a complex evolving system, such as a university that is transitioning towards greater equilibrium of its associated social and ecological systems. It advocates modelling techniques across multiple scales and dimensions (economic, environmental and social), integrating multiple perspectives from each, and moreover, "embraces uncertainty through a cycle that links hypothesis with policy with implementation with monitoring" (Sendzimir et al. 2006, p. 132). This can be considered appropriate in a research process that consists of multiple researches and learning cycles of different terms that have to be managed in the AR process.

Sarewitz and Pielke (2007) argue that it is rarely considered in science-policy discourse or decision processes that "alternative research portfolios might better achieve stipulated societal outcomes". The AR approach is just such an alternative. It enables the researcher to operate with the supply and demand of science to realise a dynamic role in society by ideally matching the needs of end-users of scientific knowledge produced (Sarewitz and Pielke 2007).

It also operates at the science-policy interface, defined by van den Hove (2007) as a social process that encompasses "relations between scientists [students, practitioners and decision-makers] in the policy process…" allowing "for exchanges, co-evolution, and the joint-construction of knowledge" enhancing social impact. The ideal goal of all this is social and organisational learning: a change in understanding occurring in the individuals populating and influencing the university's transformation—stakeholders, co-researchers, policy-makers and management—at the surface level and at a deeper level "demonstrated by a change in attitudes, world-views or epistemological beliefs" (Reed et al. 2010) towards a sustainable development of and by their institute in its urban, regional and international settings. Central to this cause at UM are just such a group of individuals, the GO, whose mandate is to manage the sustainability portfolio of UM in the areas of research, education, operations, governance and community engagement. This project also looks at how it is fulfilling its role towards the overall sustainability transformation of this university.

This research project can be boiled down to providing and brokering scientific knowledge in the AR approach so that university management and 'Green Offices' (student-driven, staff-supported sustainability departments: http://greenofficemaastricht.nl/) have a balanced account of how to gear up their institutes as trans-sectoral actors and facilitators of transformational change in the 21st century. This aims to bolster the usual indicators of successful performance of HEI's (student numbers, research project acquisitions, rankings etc.) as well as emphasising governance for sustainable development and corporate responsibility using findings that might only be gleaned using AR in participation with the 'doers', stakeholders in the university's overall transformation to become more sustainable.

4 The Action Research Approach

> Action research is a period of inquiry, which describes, interprets and explains social situations while executing a change intervention aimed at improvement and involvement. It is problem-focused, context-specific and future-oriented (Waterman et al. 2001).

Action Research (AR) builds on the philosophical tradition of Pragmatism; that is to say, the notion that knowledge (whether obtaining it or sharing it) is based on observing the consequences of intentional action. Moreover, its participatory mode follows a democratic approach to knowledge production, with the researcher being actively involved in intentional change. Policy and management advice is developed iteratively using an active collaboration of researchers and practitioners where those studied are also deemed as 'co-researchers' (Heiskanen and Rask 2008).

It aims to facilitate social learning and the development of novel, scientifically sound yet practicable knowledge by involving relevant stakeholders, including the researcher, in multiple cycles of planning, action, observation and reflection (Waterman et al. 2001). The objective is be aware of where the researcher places herself on the spectrum between the 'objective' observer and the active team member: balancing the role between acting as a 'critical insider or friendly outsider'. According to Brannick and Coghlan (2007), AR is one of three major research paradigms where one can do 'insider-research': defined as "research by complete members of organizational systems in and on their own organizations".

The challenges subsequently arise from access, pre-understanding, role duality, and managing organisational politics and chicanery (Brannick and Coghlan 2007). The last is considered of particular relevance for any study approaching the often thorny issue of integrating sustainability into an organisation.

Despite such challenges, there is growing appreciation for AR in the social scientific community (in light of initial scepticism from naturalists) apropos 'insider academic research' (Brannick and Coghlan 2007). Furthermore, it is strengthened when combined with other statistical and comparative approaches. It assumes that in order to understand the nature of complex systems, we must dismantle them into units to examine the underlying complex relationships and mechanisms internal to

the case under study [Wallerstein (1974) in Moses and Knutsen (2012)]. As an 'insider' in organisational research one must untangle the complex knot of interactions and internal causal mechanisms from which an organisational transformation takes hold and propagates.

Positive evidence that supports AR as an overarching methodology to undertake and motivate best practice in the management of sustainability at organisations is found in the findings of Hind et al. (2013). Their study focusses on the "developmental methodology" designed to assist organisational learning in a leader-driven exploration of structures and processes. Despite the top-down nature of their "action learning and action research" project specific to businesses, their conclusions point towards progress made after several iterations (or cycles) of AR in terms of awareness and implementation of sustainability strategies and responsible internal leadership (Hind et al. 2013). On the other hand, the method of employing AR is very difficult to place in one methodological camp or the other and could therefore succumb to criticism in its salience and credibility.

5 Challenges of Action Research for studying transformational processes

AR holds transformation as both the ends and the means of getting there for the organisational research of UM. As well as knowledge creation, the researcher is concerned with the transformation (hence learning) of himself, in addition to participants, subjects, co-researchers and the university as a whole, whilst also diagnosing whether this is actually happening (McCormack and Dewing 2012). Titchen and McCormack's approach to transformational AR synthesises the paradigms of critical social science and critical social theory to arrive at what they term Critical Creativity (Titchen and McCormack 2010). The criticality deconstructs and diagnoses a problem situation "to develop new understanding for the purposes of transformation of practice and generation of new knowledge"; the creativity uses imagination and expression in order to apply meaning to a holism of transformation. The fusion of the two is a "way of being, knowing, doing and becoming" that enables us as researchers "to understand and facilitate the transformation of practice and, simultaneously, create new knowledge about that transformation" (McCormack and Dewing 2012; Titchen and McCormack 2010).

To explain the hermeneutic tradition of organisational research is to see the researcher going in, or entering the site with a clean slate; that is, few or no theoretical preconceptions. This is a target which although can never be attained, allows the subject's (a university sustainability department for example) empirical evidence to guide the emergence of key themes and concepts (Brannick and Coghlan 2007). Taking the decision to actively involve stakeholders in research is an arguable necessity given the AR approach. It is ultimately both an essential opportunity and a risk in any research that requires an inside-out perspective: where you as the researcher are deeply embedded in the organisation that is both funding

you and that you are required to investigate. It does not therefore take too much of a leap to imagine that there is a political context which projects such as this come up against (Brannick and Coghlan 2007; Hoover and Harder 2014).

Another challenge when looking at the role of the researcher in studying and participating in transformational change processes, is the tension between the role of 'honest broker' and 'issue advocate' (of policy alternatives) as proposed by Pielke (2007) in his analytical reflection of the idealised roles of science in policy and politics. In light of the role of an action researcher to provide advice based on insights gained from performing conventional research in collaboration with counterparts and subjects, there is the potential pitfall of advocating one decision or choice informed by research over another because it complies to the researcher's own views, or brings a sustainability transformation to fruition. Indeed as Pielke states: "the issue advocate seeks to compel a particular decision, while the honest broker of policy alternatives seeks to enable the freedom of choice by a decision-maker" (Pielke Jr. 2007).

6 A Case-Study Employing Transformational Action Research

The Living Laboratory piloted in this research concerns the transformation of UM towards a sustainable HEI and follows three large cycles of an AR approach (see Fig. 1). It uses the information collected by performing interventional social,
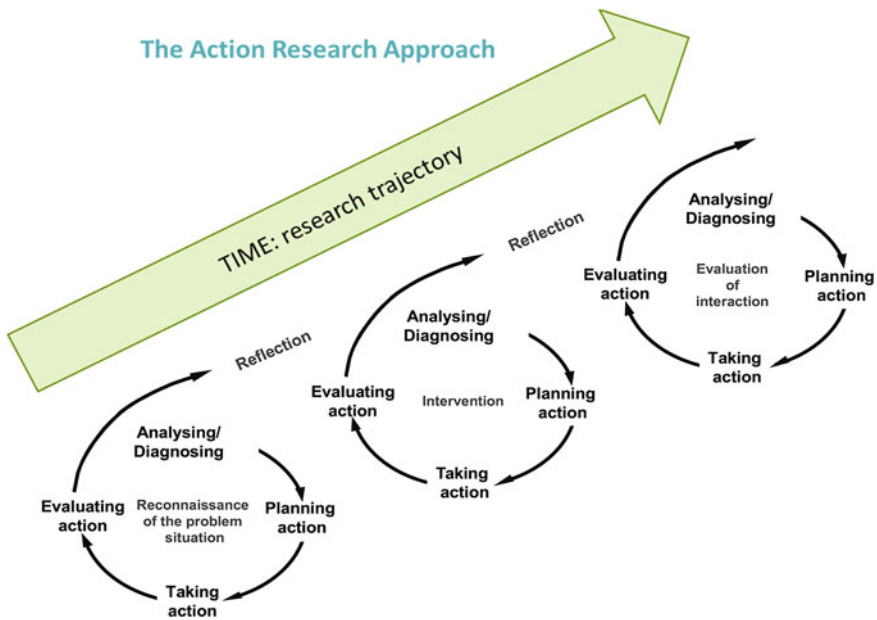

Fig. 1 Adapted from Coghlan and Brannick (2014)

organisational and behavioural experiments at UM. Thus, the generic knowledge gained in the different case studies is immediately tested and made relevant for structural organisational change. Several case studies at other universities will be performed, from which the aim is to draw a hypothesised causal mechanism buried in the experience of each of them. The first will use a 'plausibility probe' to inform the approach to the others [Eckstein (1975) in Moses and Knutsen (2012)]. This study benefits then from seeing case-studies as "histories with a point" in that they encapsulate the process (or lack thereof) of sustainability transformation at HEI's, where they are situated along this pathway, their trajectory and how they aim to reach their goals. The Living Lab is viewed as a 'within-case-study' (Moses and Knutsen 2012) since the first iteration of AR has taken place where the researcher is a complete member. UM and its Green Office are embedded in this research process as a living laboratory for organisational change. Effective pathways in sustainable transformations at other HEI's enable the researcher to integrate knowledge from other sectors with findings at UM in order to set up experiments and pilots that test the results of several AR cycles. In sum, for this research the AR approach always provides a moment for reflection after a full cycle has taken place: diagnose, plan, act, and evaluate action.

Action research must also include a lot of conventional types of research before any meaningful reflection on interventions can take place. In this grounded case, the development of a conceptual paper and analytical framework, GO assessment, UM community surveys, and interviews of key stakeholders. After this conventional research, a critical reflection evaluates then analyses the action of applying the analytical framework to a university and performing an intervention (as is the case at Maastricht University in 2015). The aim then being to diagnose the system to see what the effects have been and whether this is successful in terms of establishing a good trajectory towards a sustainability transformation or not.

Case studies abroad would also follow the same process in order to utilise and refine the analytical framework each time it is used before one cycle is complete. The difference being that during the evaluation phase lessons would need to be learnt that are generalizable and able to be applied back in Maastricht within its specific organisational culture. After an intervention based on these lessons, the system (university) would be assessed in order to diagnose the effects as above.

Upon reflection of the author's own role as an action researcher investigating the organisational transformation and systemic change in and of universities towards greater sustainability, other methodological insights become clear. After one complete iteration of AR at UM the case for it being an appropriate methodology has become increasingly self-evident, however this has not been without the need for the researcher himself to learn! As Hind et al. (2013) point out, action learning was also important for the academic team, facilitating their own learning and that of the participants in order to generate useful knowledge. As with the author's experiences in UM and its Green Office, it was absolutely necessary to see what has been learnt, how these perspectives might indeed affect conventional research such as holding interviews, and reflexively what meaning could be built from this. The

purpose of all is to "expose the constraints of organisational realities and uncover alternative solutions to sustainability challenges" on campus (Hind et al. 2013).

Occasionally one finds that in AR, one of the major challenges is the demand for an impromptu disclosure of results from the conventional body of research by the subjects and co-researchers (Heiskanen and Rask 2008) at key moments of analysis. This occurred in the UMGO case. Being in the midst of analysis of interview transcripts and documents of the organisational structure surrounding the GO, there was the demand to provide insights from provisional results in order to determine criteria for how best to select a new member of its Supervisory Board. After one year of reconnaissance of the problem situation at UM, it was decided that to disclose recommendations could be done coherently, in order to maintain the essential working relationship, trust and legitimacy of the researcher with co-researchers, subjects and participants. It was also necessary in this case to remain objective and systematic in the choice in order to fulfil the role of honest broker rather than issue advocate.

7 Discussion and Conclusions

The limitations of this chapter so far begin with the temporal challenge of AR: because it will last the four-year duration of the research project, the work represented in this chapter is concurrent and cumulative; it represents a snapshot after one year of analysis and does not represent policy recommendations eventually produced for UM. It has instead aimed to illustrate a specific social scientific research method that contributes to knowledge of a structural transformation of public institutions towards sustainability, shedding light on the extent to which sustainability initiatives and activities add value to university governance and beyond. This is exemplified in spill-over effects—such as knowledge exchange and industrial student placements—on society, corporations, and other public institutions.

In the studied projects, the researcher provides advice based on the results of the evaluation and reflection stages of the AR iteration, as well as the case study research on how to improve the transformation towards a sustainable HEI. The impossibility of the accurate prediction of factors and aspects of socio-ecological transformation is accepted despite the ingrained role of the researcher in the system under transformation. Values and therefore solutions to the sustainable development predicament cannot be defined *ex ante* (Voß and Kemp 2006), only in practice, in an iterative process of action and reflection. Subsequently, the approach to this study has met obstacles and drawbacks largely as part of the very reflexive nature of the AR process, and especially when case-study results are implemented in pilot schemes. However, in this process, failure is considered just as valuable an experience and result to learn from as success.

This chapter has aimed to illustrate how campus sustainability challenges are addressed from one researcher's embedded view in order to help build a better understanding of them. In essence, and in the context of organisational transformation towards embedding sustainability at UM, AR has enabled the researcher to come closer to seeing how operational, social, and governance processes take place up close, which conventional 'desk' research might not have otherwise gained access to. As practitioner, friendly outsider and critical insider at different moments of the AR cycle, the researcher must adopt many different roles and articulate them to colleagues, subjects, co-researchers and not least herself. Being this ingrained into the organisation, insights from the academic literature can be corroborated in practice. Insights gleaned from observations that corroborate findings from the behavioural change literature include recommendations for interventions that could stimulate 'pro-environmental behaviour in terms of appropriate physical facilities, tailored persuasive communications, and the active engagement of middle management' (Lo et al. 2012). This exemplifies the boundary worker component present in the function of the action researcher, at the policy, practice, science border, translating and brokering knowledge to and fro with a diversity of stakeholders (Pielke Jr. 2007). The action researcher can furthermore function at the interface of the internal properties of the university and its external environment at the societal or regime level, with the purpose to fill the void between top-down and bottom-up governance structures (Fraser et al. 2006) and stimulate "students, educators, researchers, and academic practitioners" using findings after each iterative cycle in transformational AR (McCormack and Dewing 2012).

Ultimately, this approach can forge collaborative partnerships within organisations (from the observed experiences of the author in this case with the GO and other faculties) and with local stakeholders in building and maintaining resilience and encouraging innovation and transformability in achieving sustainability (Manring 2014). The university is then more able enter into partnership with external actors in a form of collaborative governance (Zadek 2006) that proves its extrinsic motivations for policy-driven organisational change. It is hoped that this short chapter's contents can provide valuable lessons for enhancing the role of universities for sustainable development against the global imperative created by the fledgling UNESCO Global Action Programme of Education for Sustainable Development and the UNSDG's.

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