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Creating research impact through the productive interactions of an individual: an example from South African research on maritime piracy

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Abstract

This study applied the 'productive interactions' approach of research impact assessment to the case of maritime piracy research in South Africa. The focus was on the stakeholder interactions associated with the doctoral work and related activities of an individual researcher. A set of documents—provided by the researcher as evidence of potential impact—was coded systematically in terms of the direct and indirect interactions reflected and whether those interactions were productive. Evidence of either research uptake or research use was taken to imply a productive interaction. The coding generated eleven instances of productive interactions, presented in the form of a contribution narrative. Additional information for contextualization, obtained from interviews with the researcher and one of the stakeholders, was also considered. The study highlights the role of research in relation to an expert's productive interactions and comments on the feasibility of self-documentation as a method for data collection when constructing an account of contribution. A framework that addresses the lack of focus on the broader effects of productive interactions is also presented, for consideration in future studies of the impact of individual researchers.

Key words: productive interactions; research impact; self-documentation; SIAMPI; societal impact

1. Introduction

Research is a complex endeavour that, in terms of its impact, is more suitable for demonstrations of contribution than attribution (Penfield et al. 2014). One definition of research is that of an 'organized search process in which knowledge is designed' (Kok and Schuit 2012: 3). This implies that any research has epistemic goals (i.e. knowledge creation), either implicitly or explicitly stated. In turn, such epistemic goals overlap to various degrees with a set of more practical goals (again implicitly or explicitly stated), depending on where the research in question is located on a fuzzy spectrum of basic and applied research (Bentley, Gulbrandsen, and Kyvik 2015; Boshoff 2017). The disciplinary (or multi-, inter- and transdisciplinary) nature of research activities adds another layer of complexity to assessing the impact of those activities (Van Drooge and Spaapen 2017). Moreover, given the accumulative nature of research, any research—to different degrees—is shaped by prior research. The impact of a single research study, therefore, cannot be separated from the impact of a larger body of research-based knowledge. The perceived impact of research also often manifests because of the actions of parties only remotely connected to the research or totally disconnected from it (Rymer 2011).

For all of the above reasons, and others, it makes sense that demonstrations of contribution, as opposed to attribution, have taken central stage in the field of research impact assessment (RIA). Two of the current methods are contribution analysis for RIA (Morton 2015) and contribution mapping (Kok and Schuit 2012). Although related, the two methods have different disciplinary roots. The first is embedded in programme evaluation theory and the second in science studies and the sociology of science, specifically actor-network

theory (ANT). ANT is a theoretical orientation that considers the 'associations between human and non-human agents in order to better understand how social dynamics are reassembled in contemporary settings' (Baron and Gomez 2016: 129–30). The influence of ANT in RIA is also evident in the approach developed by the National Institute for Agricultural Research (INRA) in France. The latter organization aims to develop 'RIA approaches that go beyond traditional methods and are suited to the current interactions between research, innovation and, society' (Matt et al. 2017: 208).

Under the influence of social network analysis, an emphasis on the process of impact creation and the interactions between engaged stakeholders have gained prominence in the discourses surrounding RIA (Meagher, Lyall, and Nutley 2008; Upton, Vallance, and Goddard 2014). It is recognized that the societal impact of research manifests because of various unique configurations of human and non-human 'actors' within broader innovation chains. Such a view has little appreciation for linear conceptions of impact that link research outputs to outcomes. Instead, the analytical focus is on the multitude of linkages between the actors involved in the process of impact creation.

It is against this background that the current study applied selected aspects of one such process-oriented approach, called SIAMPI (Spaapen and Van Drooge 2011), to the case of maritime piracy research in South Africa. The chosen approach (explained in the next section) emphasizes the interactions between research and its stakeholders, specifically what are referred to as 'productive interactions' (Spaapen and Van Drooge 2011: 211). The current study is particularly relevant in light of a shortage of studies that apply selected insights from the SIAMPI approach empirically. It addressed the vacuum in three ways. First, the object of assessment was not a research project but a set of interactions of an **individual researcher** and specifically work associated with the topic of the researcher's doctoral study. Second, the interactions and their effects were obtained through the **self-documentation** efforts of the researcher (e.g. emails and other letters, publications, and curriculum vitae [CV]). Third, an attempt was made to **code and map systematically** the transition from a research–stakeholder interaction to a productive interaction.

The next section discusses the SIAMPI approach and the key notion of productive interactions (Section 2). This is followed by a brief discussion of the relevant research on maritime piracy in South Africa, which is very much linked to the activities and expertise of a single individual (Section 3). The methodology for extracting and presenting productive interactions from self-documented material appears in Section 4. Section 5 provides a systematic description of the productive interactions (and the interactions of interactions). Section 6 discusses the main insights and introduces a framework for dealing with the lack of emphasis on the broader effects of productive interactions. The latter framework is important, given SIAMPI's preoccupation with immediate changes in the stakeholders' behaviour and settings, often at the expense of other broader effects.

2. The SIAMPI approach with its focus on productive interactions

SIAMPI is an acronym for a Framework Programme 6 project of the European Commission entitled, **S**ocial **I**mpact **A**ssessment **M**ethods for research and funding instruments through the study of **P**roductive **I**nteractions between science and society (SIAMPI 2011). According to SIAMPI, for social impact to occur, there would need to be some productive interaction between the research and any stakeholder of such research. Five sets of insights are crucial for understanding the SIAMPI approach.

1. SIAMPI refers to **stakeholders** in a wide and all-encompassing sense—'all those involved in achieving social impact: researchers, industry, public organizations, the government, the general public' (Spaapen and Van Drooge 2011: 212). This provides a first suggestion that SIAMPI is an open-ended approach. It does not preach any specific method or technique for assessing the interactions between the different categories of stakeholders and the research in question. The research, type of stakeholder and kinds and magnitude of engagement will inform the appropriate method for investigating research–stakeholder interactions (e.g. interviews, focus groups, bibliometrics, or a documentary analysis).
2. Research–stakeholder **interactions** can be any of three types (occurring before, during, and after completion of the research). The first involves direct interactions, or direct contacts established between individuals. Examples are face-to-face meetings, video-conferencing, and email correspondences. The context of such interactions ranges from highly structured (e.g. a formal partnership agreement between two organizations) to unstructured and informal (e.g. a serendipitous encounter between two like-minded individuals) (SIAMPI 2011). The second category of interactions represents indirect interactions. Here, the research and the stakeholders are connected through some kind of information carrier. A typical example would be a stakeholder that interacts indirectly with a research project based on the published articles, policy briefs, and data generated by that project. Financial interactions are the third category of interactions and include research contracts, financial support, or other so-called 'in-kind' contributions (Spaapen and Van Drooge 2011). Financial interactions do not occur in isolation but are always accompanied by direct or indirect interactions, or both (SIAMPI 2011).
3. Any of the above three types of interaction is considered **productive** when a stakeholder makes an effort to engage with the research as a result of or under influence of that interaction (Molas-Gallart and Tang 2011). Spaapen and Van Drooge (2011: 212) added more detail to the description of 'productive'—an effort to engage means that stakeholders 'somehow use or apply research results or practical information or experience'. A productive interaction therefore corresponds to instances of both research uptake and research use, given the references to 'engage' (uptake) and 'apply' (use) in the above descriptions. Morton (2015), in her discussion of contribution analysis in RIA, provides much clearer examples of the difference between research uptake and use. Evidence of any of the below-mentioned would thus result in a research–stakeholder interaction being labelled 'productive':

> Research uptake: research users have engaged with research: they have read a briefing, attended a conference or seminar, were research partners, were involved in advising and shaping the research project in some way, or engaged in some other kind of activity which means they know the research exists. [...] Research use: research users act upon research, discuss it, pass it on to others, adapt it to context, present findings, use it to inform policy, or practice developments (Morton 2015: 406).

4. Should a productive interaction result in a stakeholder doing things differently, or doing very new things, the interaction is said to be **impactful** (Molas-Gallart and Tang 2011). The qualifying criteria are changes either in the behaviour and opinions of individual or groups of stakeholders, or in the broad stakeholder settings, including changes in policy and practice (De Jong et al. 2014). Morton (2015: 406) holds a similar view of impact, namely 'Research impact: changes in awareness, knowledge and understanding, ideas, attitudes and perceptions, and policy and practice as a result of research.'
   However, a focus on impact is not a primary concern for SIAMPI. The approach is not that much interested in the expected long-term (and high-level) outcomes as often portrayed in logical frameworks in programme evaluation practice. SIAMPI shifts the impact discourse away from expectations about future impact, and anchors it in the present, thereby changing impact into something that is much closer to the process of doing research and also much closer to stakeholders that operate in the 'vicinity' of the research. As a result, the broader effects of productive interactions are either underplayed or ignored.
5. The objective of SIAMPI, as an evaluation approach, is not to judge and account but to **learn and improve**. Productive research–stakeholder interactions are considered 'near vital to achieve social impact' (Spaapen and Van Drooge 2011: 212). Consequently, insights about interactions that became productive can be used to manage such interactions strategically, for instance, by creating the necessary enabling conditions for their repeated occurrences.

Although the notion of productive interactions is well referenced in the RIA literature, it is notable that, other than the case studies that formed part of the SIAMPI project (Molas-Gallart and Tang 2011; De Jong et al. 2014), there have been very few empirical demonstrations of the SIAMPI approach. One exception is a study by Van Dorp, Lowik and De Weerd-Nederhof (2017), which used stakeholder theory to highlight the salience of the actors involved in productive interactions and impact creation. Wolf et al. (2013), another exception, developed and included criteria for productive interactions in a structured database for the research evaluation of individual scientists. Other than those, the notion of productive interactions appears to be a basket concept in the RIA literature, mainly used as a theoretical 'hook' for studies that prioritize the processes that are associated with impact over the outcomes that reflect on impact. For instance, Robinson-Garcia, Van Leeuwen, and Rafols (2017) used the idea of productive interactions and networked indicators to justify the use of altmetrics theoretically for a contextualized mapping of societal impact.

In the light of the above, the current study attempted to advance the SIAMPI approach empirically as a method. It coded different elements of a set of documentation (compiled as evidence of potential impact) in terms of the type of interactions that are reflected and whether the interactions can be considered productive. The objective was to map and contextualize the transition from a research–stakeholder interaction to a productive interaction.

Figure 1 presents a schematic display of the transition from interaction to productive interaction (and impact), which served as a conceptual guide for the current study. The figure comprises two parts. The top part represents a very simplistic portrayal of the transition, since only one research project was involved. The logic should be clear: a research project (grey rectangular box) is characterized by different interactions (dotted lines), some of which would become productive (black circle) and others not (dotted lines without black circles). Eventually some of the productive interactions would also become impactful (pattern-filled blocks). The distances between the black circles and the pattern-filled blocks indicate time differences. This means that the transition from productive interaction to impact could, in some cases, be almost instantaneous whereas, in other cases, of longer (and unknown) duration.

The bottom part of Figure 1 presents a more realistic picture. Interactions often span different research projects (and other kinds of activities) with an overlap in time and space. Implied in this picture of multiple projects and overlapping, disorderly interactions is the idea of distributed agency. No single actor can claim ownership of changes that might occur.

> The subsequent changes in action achieved are the result of the distributed agency of multiple actors and a confluence of actions, knowledges and circumstances. Such changes are part of evolving, complex and open systems in which change is continuous, non-linear, multi-directional and difficult to control (Kok and Schuit, 2010: 2).

Moreover, in complex and open systems, the boundaries of what classifies as research and what lies outside research are often blurred. This would, for instance, be the case when some of the research projects in Figure 1 start to take the form of service delivery initiatives, expert consultations and outreach activities.

3. The study participant (an expert) and the field of study (maritime piracy)

The study focussed on maritime piracy research, as reflected in the doctoral work and associated activities of a prominent South African researcher (the study participant, referred to as Prof. Z in this article). Prof. Z had served for 24 years in law enforcement before his academic appointment at a tertiary institution and registration as a doctoral student. He specializes in the application of the law enforcement approach in dealing with perpetrators who were being apprehended at sea and released without prosecution by coalition navies operating in the area (CV of Prof. Z).

His doctoral study—completed in 2006—focussed on the policing of piracy and armed robbery of ships (PARS) in the seas surrounding South Africa. It highlighted four challenges that confronted South African maritime security at that time:

- the country's national interest would have been seriously affected by incidents of PARS;
- international law in relation to South Africa was insufficient to deal effectively with incidents of PARS;
- at the time, the policing capacity of South Africa was also insufficient to deal with incidents of PARS; and
- the country lacked a coordinated counter-strategy for dealing with PARS incidents.

Given the scope and complexity of these challenges, the recommendations of the doctoral study were all-encompassing and comprehensive. It ranged from suggestions to modify legal concepts and legislation to clearly defined roles and action points for all

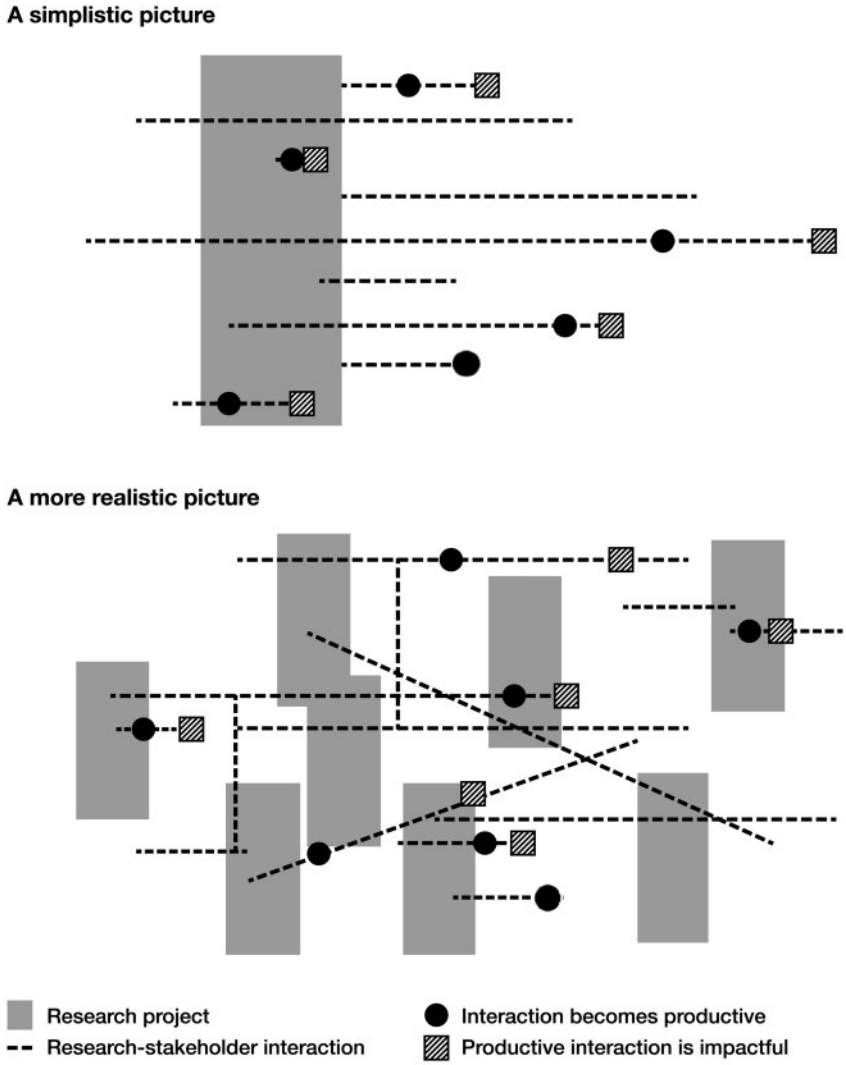

Figure 1. Transition from research–stakeholder interaction to productive interaction to impact.

Note: For both the simplistic picture and the more realistic picture, the horizontal axis represents chronological time and the vertical axis the relative proximity of different projects, interactions, etc.

stakeholders concerned, i.e. not only local and regional stakeholders, but also global stakeholders. Relevant stakeholders included the public sector, the private sector, non-governmental organizations (NGOs), and inter-country and inter-governmental agencies.

Prof. Z is regarded as an international expert in his area of interest and is rated as an established researcher by the South African National Research Foundation. It is therefore important to note the porous boundary between a credentialed researcher and an experienced practitioner, an observation that has long been recognized in the sociology of science. According to Collins and Evans (2002: 253), it remains 'difficult to separate the credentialed scientist from the experienced practitioner' because 'when we move toward experience as a criterion of expertise the boundary around science softens, and the set of activities known as "science" merges into expertise in general'. It is also important to keep in mind that research, as a form of factual knowledge, constitutes only one of many parts of what could best be described as the integrated 'knowledges' (in the plural) of an expert. Experience constitutes another part. Such a pool of integrated 'knowledges' is similar to the concept of a knowledge store, defined by Boshoff (2014: 1) as 'a dense set of personal knowledge, consisting of procedural knowledge, factual knowledge, potential factual knowledge and opinions/beliefs; the totality of which is continuously refined through more experiences and additional information received from people, documents or events'. Factual knowledge means knowledge that is based on the best of currently available research; procedural knowledge refers to skills and abilities that reveal themselves only in action (Boshoff 2015).

Finally, the domain of maritime piracy—the setting for Prof. Z's interactions—is a transdisciplinary field. Wagner et al. (2011: 16) describe transdisciplinarity as a 'new mode of knowledge production' where different societal stakeholders provide relevant knowledge inputs. Transdisciplinarity deals with complex social issues that require co-creation of solutions by many stakeholders, and which often finds expression as problem-oriented research (Klein 2008). The research that Prof. Z conducted for his doctoral study was not transdisciplinary although he did incorporate the views of

Table 1. Example of coding elements

Codes	Interactions and efforts
i18	Prof. Z co-authored an article in the *World Maritime University Journal of Maritime Affairs*.[S1]
d31	University lecturer in the UK: 'I am conducting research on piracy largely from a political science perspective. And hence found your alternative (and very practical) take on the issue exceptionally useful.'[S2]
e06*	The university lecturer placed the article on the university's online platform of publications dealing with maritime piracy.[S2]
d38	Prof. Z participated in a United Nations expert meeting in Vienna on the investigation and prosecution of transnational organized crime at sea.[S1, S3]
e09	'The outcomes of the expert meeting will provide input to a final report with recommendations that provide a better understanding of the challenges faced in tackling international organized crimes committed at sea and identify areas for possible future action. These findings and recommendations will be reported to the meeting of the Commission on Crime Prevention and Criminal Justice in April 2013.'[S3]

Codes: d = direct interaction; i = indirect interaction; e = stakeholder effort; * = enabling factor.
Sources of evidence:
[S1]CV;
[S2]Letter 2;
[S3]Letter 6.

different stakeholders into his research by interviewing them. The transdisciplinary nature of maritime piracy lies in the uptake and use of Prof. Z's research (or rather the uptake and use of his set of integrated 'knowledges'), as should soon be clear from the description of productive interactions in Section 5.

4. Approach followed to identify and contextualize productive interactions

The study approach is best summarized as an evidence-based contribution narrative, structured according to instances of productive interactions between Prof. Z and the stakeholders of his research and related activities. The approach involved four stages.

First, Prof. Z, the study participant, compiled a portfolio of his research interactions and potential impacts, in the form of a 134-page file. The file included a CV, news clips, and copies of various emails (e.g. meeting invitations and letters of commendation).

Second, the authors of this article systematically coded the file contents in terms of four criteria: direct interactions, indirect interactions, stakeholder efforts (indicating productive interactions) and factors that could serve as enabling conditions for knowledge dissemination and productive interactions (see Table 1 for an example). The coding exercise was confined to the period 2005–2014. The sources of evidence were also noted.

Third, a face-to-face interview was conducted with Prof. Z to clarify uncertainties, to elaborate on the documented interactions, and to enquire about other interactions not covered by the documentation provided. The interview was digitally recorded and transcribed. A second interview was conducted telephonically with one of the stakeholders of a set of productive interactions. This was also digitally recorded and transcribed.

Last, the contribution narrative was constructed, which is a story of contribution using the coding elements and their linkages as anchor points.

5. Systematic description of productive interactions

As a first output of this study, an attempt was made to visualize the different coding elements (direct interactions, indirect interactions, and stakeholder efforts) and their linkages. Figure 2 presents such a visual summary of the research–stakeholder interactions of Prof. Z, for the period 2005–2014, as constructed from the documentation provided. A total of 47 direct interactions was extracted (d01–d47), together with 29 indirect interactions (i01–i29) and 11 instances of stakeholder efforts towards either uptake or use (e01–e11).

The 11 instances of uptake or use represent examples of productive interactions. The remainder of this section is therefore devoted to these cases only (coding elements e01–e11). For each case of productivity, the interactions involved are highlighted, followed by a statement about why the interactions are considered productive. Additional data, in the form of interview data, are also presented to contextualize each instance of productive interactions. All of these are presented as a narrative of contribution and the codes used are the same as those in Figure 2. Enabling factors and conditions (indicated with a star in Figure 2) are indicated with an asterisk (*) in the narrative.

5.1 International Maritime Organization took up the research-based expertise of Prof. Z (coding element e01)

Interactions extracted from documents: Prof. Z graduated in 2006 with a doctorate in policing from a tertiary institution in South Africa (i02). Prior to graduation, he had already published four relevant articles in a local community-based magazine for safety and security practitioners (i01), and presented on policing maritime piracy at two conferences, both nationally and internationally (d01; d02).

After he had obtained his doctorate in 2006, he went on to publish another article in a local academic journal on criminology (i03), and was invited to present at two conferences nationally (d03). Later in that same year, a Combined Joint Task Force took form following the interest that came about in the Horn of Africa on maritime piracy, and Prof. Z was invited to participate in a conference on East Africa and South West Indian Ocean Maritime Security Conference, held in Madagascar (d04). The Madagascan conference provided a forum to assist regional nations in developing a comprehensive and collaborative strategy to improve maritime piracy. Among the participants were senior officials from relevant government institutions in various countries together with senior representatives from international, regional, and maritime-related NGOs (d04*). Thereafter Prof. Z published two more articles in the community-based journal for safety and security practitioners (i04).

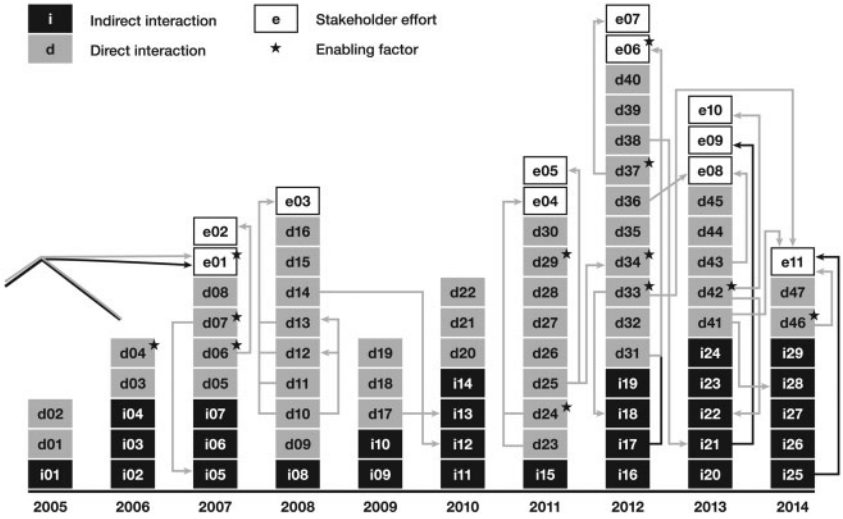

Figure 2. Summary of research–stakeholder interactions of Prof. Z, constructed from the documentation for the period 2005–2014.

In March 2007, the International Maritime Organization (IMO) included Prof. Z on their Roster of Experts and Consultants.

Reason why interactions d01–d04 and i01–i04 are considered 'productive': Adding Prof. Z to their roster showed that the IMO knew of his research-based expertise and that his research existed (e01). The above-mentioned interactions most probably contributed to that knowledge, as they all preceded his IMO listing. The listing created reputational benefits for Prof. Z, and was an enabling factor (e01*) for further productive interactions.

Additional information: The above chronologically constructs the trail of events immediately preceding Prof. Z's listing on the IMO roster, based on the documentation provided. However, an interview with Prof. Z produced a different narrative. While still busy with his doctorate, Prof. Z became a member of the Maritime Law Association of South Africa, of which the Comité Maritime International is the parent organization. The latter held their annual conference in South Africa at the time of his doctorate. Prof. Z attended the conference primarily to interview some of the international experts for his doctoral research. One of those interviewed had ties with the IMO and recommended that Prof. Z be included on their roster. Establishing contact with that one expert turned out to be the decisive (direct) interaction that became productive, based on SIAMPI criteria.

5.2 South African Police Services took up and used the research-based expertise of Prof. Z (coding element e02)

Interaction extracted from documents: In 2007, the year after having obtained his doctorate, Prof. Z was invited to present at a strategic meeting of the South African Police Services (SAPS). The topic was the hijacking of vessels at sea and on inland waters within the jurisdiction of South Africa (d06). The stated purpose of the meeting was to address ways to counter hijacking of ships and platforms. A proposed policy outline was included on the meeting agenda (d06*), which created an enabling environment for knowledge uptake and use. Following the presentation, a SAPS commissioner wrote a letter of commendation, stating that Prof. Z 'contributed to establishing, confirming and broadening knowledge about the hijacking of vessels in the committee currently attending to policy making in this regard. His research and presentation will contribute to completing this process within acceptable time and cost limitations.' (Letter 1)

Reason why interaction d06 is considered 'productive': The policy-making effort of the SAPS was informed by the research and expertise of Prof. Z (e02).

Additional information: From the above description, the interaction that turned productive (according to SIAMPI) was Prof. Z's participation in the strategic SAPS meeting. An interview with Prof. Z revealed that this direct interaction was not an isolated event but embedded in a series of past interactions with the SAPS: 'When I was a member of the SAPS, we worked together … If you take [person X]; he and I worked together in the police, we worked in the same unit and we studied … together.'

Prof. Z's ease of interaction with the SAPS and his contacts within the organization thus predated his academic career, going back to an earlier time of own employment with the SAPS.

5.3 South African Navy took up and used the research-based expertise of Prof. Z (coding element e03)

Interactions extracted from documents: In 2008, Prof. Z wrote a letter to a senior official in the South African Navy, informing the official of disturbing developments in the proximity of South Africa's sea borders concerning armed attacks on ships (d10). The senior official responded that the issue would be raised at the highest level of the relevant government department (d11). In aid to address these threats of maritime piracy, Prof. Z was requested to present at the South African Defence Force Intelligence (d12). This was followed by a presentation of the findings and recommendations of his doctoral research to the Navy Command Council (d13).

Reason why interactions d10 to d13 are considered 'productive': The South African Navy was made aware of the research of Prof. Z and discussed it at two strategic meetings (e03).

Additional information: Again, the productive direct interaction was triggered by a series of earlier interactions. An interview with Prof. Z revealed the chain of interactions. It all started with a presentation by Prof. Z at a South African conference on maritime piracy and security (d01) in 2005, when he was still completing his doctorate. An attendee from the USA, impressed by Prof. Z's talk, invited him to present at another conference that was then still being

planned. The latter conference eventually took place in Madagascar, in 2006 (d04*; Section 5.1), where Prof. Z established contact with the official from the South African Navy. Earlier on, at a very different occasion, Prof. Z had also interviewed an official from the South African Navy for his doctoral research. Following interactions with these two individuals, he realized the navy had to be informed about the possible threat of piracy incidents in South African waters, in order to act proactively. That trigged him to write to the two officials' superior, requesting an opportunity to share relevant insights from his doctoral research. The confidence to do so emanated from earlier interactions with the navy while still employed with the SAPS.

> When I was in the SAPS, I also liaised with the South African Navy, with South African Maritime Safety Authority, with other bodies and you know over a period of time one got to know people in various things. But of course people come and go and people change but one has the confidence to go there and to create new contacts.

5.4 World Maritime University took up and used the research-based expertise of Prof. Z (coding elements e04 and e06)

Interactions extracted from documents: In 2008, Prof. Z was asked to present a paper at a symposium at the World Maritime University (WMU) in Sweden (d14), on the manifestation and challenges of combating piracy in Africa. Two years later, in 2010, the paper appeared as a chapter in a book by the WMU (i12). A co-authored article in the *WMU University Journal of Maritime Affairs* appeared next (i17). Subsequently, a university lecturer in the UK studied the article and emailed Prof. Z with feedback (d31): 'I read your article on the problem of criminal investigations and piracy with great interest. I am conducting research on piracy largely from a political science perspective, and hence found your alternative (and very practical) take on the issue exceptionally useful.' (Letter 2)

The lecturer also requested permission to list the article in their online research portal for maritime security, and in doing so, created further awareness about Prof. Z's work and research.

Reason why interactions d14, i12, and i17 are considered 'productive': Interactions with the WMU set the stage for a publication that was considered very relevant by a third party who, in turn, made it accessible to others (e06).

Moreover, in 2011, Prof. Z became a member of the scientific committee for the International Conference on Piracy at Sea (ICOPAS) (d23), an event that is organized by the WMU. He also presented a paper at the conference (d24). The conference was attended by more than 410 participants from more than 70 countries (d24*), most of which either had suffered from piracy at the time or were involved in combating the menace. The conference concluded with the adoption of the Malmö Declaration (WMU 2011), calling on all concerned to do their utmost to coordinate efforts in combating piracy and other violent crimes at sea. In a letter of commendation, the organizing committee of ICOPAS thanked Prof. Z for his contribution, stating, 'Your contribution ensured that the discussions on one of most pressing and serious issues facing the maritime community today were reflective, diverse, and relevant.' (Letter 3)

Reason why interactions d23 and d24 are considered 'productive': The research and expertise of Prof. Z—through interactions with the WMU—found expression in a conference declaration with strong potential for influencing policy and practice developments in many countries (e04).

Additional information: Prof. Z's initial contact with the WMU could not be established based on the available documentation. It only became clear in the interview. The contact originated through networking at an international conference, made possible by the fact that maritime piracy at the time did not attract any research interest.

> When I was in the early stages of my study, it was here about 2003 or 2004, the International Maritime Bureau held a conference in Kuala Lumpur and I went to that conference. Because at that stage there were very, very few people [who worked on maritime piracy] . . . I think four or five in the world. There I met the other people. From that conference, when I came back, [Person Y], who was at the World Maritime University, invited me and paid for me to come and speak to them there.

In the interview, Prof. Z also commented on the potential of the Malmö Declaration to influence the policy and practice initiatives of countries:

> You see when a conference like the Malmö conference takes place, practitioners worldwide look at the publication, of the results of that. That has an influence on their thinking and as time goes by with other influences coming in, you know, I saw this at the Malmö conference . . . That is how one's thinking evolves. And it's not from one particular trigger.

Here, Prof. Z alludes to the distributed agency of research influences in policy and practice, which makes it impossible to attribute any future policy developments in a country solely to the Malmö Declaration adopted at ICOPAS.

5.5 Priority Crime Investigation Directorate in South Africa took up and used the research-based expertise of Prof. Z (coding element e05)

Interactions extracted from documents: In April 2011, Prof. Z participated as an expert in the investigation of a major crime scene of piracy at sea, at the port of Durban in South Africa (d25). A large oil tanker and its crew had been held hostage by Somali pirates for 58 days off the coast of Somali, and were only released after the payment of a ransom. The International Criminal Police Organization (Interpol)—through the South African Interpol National Central Bureau (NCB) in Pretoria—called upon the Directorate for Priority Crime Investigation (DPCI) in South Africa for assistance. Assistance entailed boarding of the vessel off Durban (following its release), declaring the vessel a major crime scene and participating in the on-board investigation. Prof. Z assisted with expert advice during the preparation for the operation and during the investigation on board the vessel at sea. The investigation was considered a first for South Africa.

One year later, as a follow-up to the on-board crime scene investigation, Prof. Z participated in a training session organized by the DPCI in Richards Bay, South Africa (d34). The training was attended by various relevant stakeholders (d34*). These included the SAPS and its agencies (Sea Border Policing, Criminal Record and Crime Scene Management, Search and Rescue Biology Dog, and SAPS divers) as well as the South African National Defence Force (SANDF), the US Naval Attaché, and the US Naval Criminal Investigation Service. A letter from a senior DPCI official explains

the significance of events: 'the training and the practical exercise have equipped the Task Team with the necessary skills and relative experience to respond to similar future requests by Interpol … [and] it is proposed that a centre of excellence be established for the training and exercise of local and regional components of such a task'. (Letter 4)

Reason why interactions d25 and d34 are considered 'productive': The international reputation and practice developments of the DPCI were significantly enhanced through the research-based expertise of Prof. Z (e05).

Additional information: Before starting an academic career, Prof. Z was a deputy director of Interpol in South Africa. His directorship was at a time when the country re-joined the international community following the end of apartheid and the lifting of sanctions.

> When South Africa started up Interpol again in 1993, it was I [and two others] setting up Interpol in South Africa again after a long absence. Being in Interpol South Africa enabled me to see what Interpol is doing, what they can do and what they should be doing. And that enabled me later, when I left the police to embark on an academic career, to be able to say to Interpol this is what you should be doing and fortunate enough to also be able to eventually … do some of those things and to do it together.

The 'do it together' element, in the case of the on-board crime scene investigation, was made possible through another earlier and related interaction: the coordinator of the operation, a member of the South African Interpol NCB, was a former graduate student of Prof. Z.

5.6 Media-based NGO in West Africa took up and used the research-based expertise of Prof. Z (coding element e07)

Interaction extracted from documents: In 2012, Prof. Z was invited to Ghana to participate in the lecture series of a media-based NGO (d37). Among the audience were high-profile security chiefs and their officers from across the continent, particularly Ghana, Nigeria, South Africa, Namibia, Gambia, Ethiopia, and Zambia (d37*). The NGO, based in Nigeria, covers security issues of general public interest across Africa by employing various outreach media. A year later, the NGO formally appointed Prof. Z to its board of trustees.

Reason why interaction d37 is considered 'productive': The NGO recognized the value of Prof. Z's research-based expertise and appointed him to their board of trustees to expand their operations (e07).

Additional information: From the interview with Prof. Z, it transpired that a colleague of his was initially invited to the lecture series but could not make it. Prof. Z agreed to present instead. From there, in Prof. Z's words, 'I met the people, had the opportunity to put [information] on the table and that led to all of these various other West African ventures.' In terms of influence, the interview with Prof. Z further revealed

> The CEO [of the NGO] has said to me on many occasions we influenced their thinking at the initial conference that I went to. To them it changed their whole way of thinking because they had not been thinking in terms of the maritime domain and I put that on the table there and that is where their work on that and their realization started.

An interview with the chief executive officer (CEO) of the NGO supported the claim:

> It [the focus on maritime security] became more prominent because of the work of [Prof. Z]. It wasn't prominent earlier. It was an interest quite well, but after we meet with him and going through some of his research work, it became more prominent.

The CEO also expanded on the platforms used to disseminate the work further:

> We have a television programme, which is shown across Africa. We have various seminars and conferences that we have done. We had one … we had a conference in the United States in 2015 where we talked about his [Prof. Z's] work. We also had a conference in [the Arabian Peninsula] where we also talked about his work. And, because since the encounter with him in 2012, we have been somewhat interested in what he is doing, and most of the channels we have to disseminate the information about maritime piracy.

A final output of the initial interaction was the conclusion of a memorandum of understanding (MoU) between the NGO and the South African university with which Prof. Z is currently affiliated. Based on the MoU, the NGO worked out 'a training programme with [Prof. Z]' (Interview with CEO of NGO).

5.7 State prosecutors in East Africa took up and used the research-based expertise of Prof. Z (coding element e08)

Interactions extracted from documents: In 2012, Prof. Z presented a training session on maritime piracy for state prosecutors from Tanzania (d36). The training, conducted in South Africa, was in the light of the law enforcement approach to piracy, as advocated by Prof. Z. The approach considers successful prosecution as the only way to combat maritime piracy, which means that law enforcers (police), the navy and state prosecutors should all know their respective roles and perform those in synergy. Afterwards, in a letter of commendation, the training organizer thanked Prof. Z 'for sharing the wealth of knowledge, sometimes rather overwhelming and for also pulling together extremely useful resources and information'. (Letter 5)

The training session in South Africa was followed by two more days of training in Tanzania in 2013, for representatives from the East African Association of Prosecutors (d43). Prof. Z presented on piracy as an international crime and the associated developments and challenges for successful prosecution. He shared the stage with presenters from the directorates of public prosecution in a number of African countries: Burundi, Kenya, Rwanda, Tanzania and Uganda.

Reason why interactions d36 and d43 are considered 'productive': The prosecutors who attended the training by Prof. Z received a set of resources and information that they could adapt to suit their own work context (e08).

Additional information: In the interview, Prof. Z elaborated on the reason for getting involved in the training of Tanzanian prosecutors, when first asked to assist. The training provided 'opportunities of getting your ideas across to people' and specifically 'people who have to do the work'. He also made explicit the link between his prior involvement in the SAPS, his PhD studies and the training of prosecutors.

> I was a member of the police [SAPS], so I've got a law enforcement background. And when I started this study on piracy … piracy itself revolves around the law. Everything to do with piracy is, you know, into what legal definition does it fit, into what

> legal area does it fit. So I made a study on that and it came out in my doctorate, you know the study that I've done on the legal aspect and the legislation.

Moreover, the initial direct interaction with state prosecutors created opportunity for further direct interactions, although sporadic: 'I still get emails from some of those prosecutors where they ask questions and they ask for advice … So you know, you give the ideas back and these things get implemented. People use it.'

5.8 Specialist committee of the United Nations took up and used the research-based expertise of Prof. Z (coding element e09)

Interactions extracted from documents: In 2012, the participation of Prof. Z was required at an expert meeting of the United Nations Office on Drugs and Crime (UNODC) (d38). UNODC was mandated by the United Nations Commission on Crime Prevention and Criminal Justice (CCPCJ) to convene the expert meeting, which took place in Vienna, Austria. According to the meeting invitation,

> The outcomes of the expert meeting will provide input to a final report with recommendations that provide a better understanding of the challenges faced in tackling international organized crimes committed at sea and identify areas for possible future action. These findings and recommendations will be reported to the meeting of the CCPCJ in April 2013. (Letter 6)

Following the success of the meeting, UNODC released the report as planned, and also acknowledged the contribution of Prof. Z in the report (i21).

Reason why interactions d38 and i21 are considered 'productive': The UNODC used the research-based expertise of Prof. Z to inform relevant transnational strategy (e09).

Additional information: Prof. Z's participation in the UN expert meeting in Vienna was brought about by an earlier direct interaction that he had—with someone at the WMU symposium in Malmö, Sweden (see again Section 5.4). During the interview, Prof. Z said, 'He heard me talking in Malmö. He was involved with setting up of the Vienna conference … He said to the organisers there, listen, you need to invite this guy.'

This course of events again demonstrates the interrelatedness of interactions in the creation of productive interactions.

5.9 Global commercial shipping organization took up the research-based expertise of Prof. Z (coding element e10)

Interactions extracted from documents: In 2013, Prof. Z participated in organising the first International Maritime Piracy Conference in South Africa (d42). The conference was attended by 60 delegates from across the world, representing navies, police, academia, government departments, commercial shipping and other international organizations (d42*). This conference resulted in the development of a 'food-for-thought' paper, containing recommendations to provide guidance for stakeholders responsible for combating crime in the maritime domain, specifically with the development of operational and tactical strategies (i22). In a letter of appreciation (letter 7), an international commercial shipping company stated that the conference has helped them 'to gain invaluable insight on the ability on how the South African authorities will be able to assist the commercial maritime entities and international law enforcement in the event of a piracy attack'.

Reason why interactions d42 and i22 are considered 'productive': The commercial shipping company, as an important role player in the maritime domain, engaged with the conference activities, which Prof. Z helped putting together (e10).

Additional information: The 'food-for-thought' paper, which emanated from the conference, was published in a magazine of the media-based NGO (Section 5.6), and so was disseminated throughout Africa. It also appeared in a peer-reviewed journal of African criminology (i27). Moreover, Prof. Z claimed a long-standing relationship with the representatives from the relevant commercial shipping company at the conference. During the interview, he further commented on the organized response of the shipping industry to deal with incidents of piracy attacks, 'they are regulated … they have for example best management practices which is put down by all the members of the shipping federation and they get guidance and guidelines. So they are very structured in terms of how to deal with this particular problem of piracy at sea.'

His liaison with the shipping industry is therefore limited to 'when a particular problem might come up or they want some advice on a particular aspect'.

5.10 North Atlantic Treaty Organization took up and used the research-based expertise of Prof. Z (coding element e11)

Interactions extracted from documents: In 2012, Prof. Z was the keynote speaker at the NATO Maritime Interdiction Operational Training Centre (NMIOTC) of the North Atlantic Treaty Organization (NATO) in Crete, Greece (d33). The conference was attended by more than 100 NATO professionals from all over the world (d33*). His brief was to explain 'in plain words how we should move forward in order to overcome legal difficulties and decrease hopefully the cost of maritime security operations'. (Letter 8)

The presentation was subsequently published in a journal of NMIOTC (i18). Prof. Z again presented at the conferences of the organization in both 2013 (d41) and 2014 (d46). His 2013 presentation also appeared in the NMIOTC journal (i28). Importantly, he co-developed the theme of the 2014 conference ('Building a law enforcement culture at sea for a more secure maritime environment'), which was attended by more than 80 participants from 23 countries (d46*). Prof. Z further contributed to the development of a resident course on legal issues in maritime interdiction operations, which NMIOTC started delivering in 2014 (i25).

Reason why interactions d33, d41, d46, i18, i25, and i28 are considered 'productive': A law enforcement approach to maritime security was previously outside the mission of NATO. However, through these interactions, NATO adopted the law enforcement approach as, for instance, reflected in the theme of its 2014 conference (e11).

Additional information: Prof. Z's initial invitation to present at the 2012 NMIOTC conference was facilitated by someone who heard his earlier presentation at the WMU symposium in Sweden (Section 5.4). A senior official of the NMIOTC was also invited to the first International Maritime Piracy Conference in South Africa in 2013, which Prof. Z organized (d42; Section 5.9). Finally, the university with which Prof. Z is currently affiliated also since signed an agreement with NMIOTC to cooperate in terms of research and training.

6. Discussion

This study applied the SIAMPI approach of RIA at the level of an individual, by using maritime piracy research in South Africa as an example. From the study documents, a number of research-stakeholder interactions were identified as productive—where 'productive' reflected examples of research uptake or research use, or both, as formulated by Morton (2015). The study also made explicit the link between the identified interactions and instances of stakeholder uptake and use. All of the above were based on evidence collected from documents that were provided by the study participant. Additional information for contextualization was also considered, as obtained from interviews with the study participant and one of the stakeholders. The focus was on how interactions contribute to instances of uptake or use.

However, as argued by Bayley and Phipps (2017), an approach that emphasizes the mechanisms of impact creation ('how' of impact) but downplays the endpoints of impact ('what' of impact), will inevitably create an understanding of impact that borders illiteracy. Hence, this discussion aims to do justice to the broader effects or higher endpoints of productive interactions by presenting a framework for the study of such effects in future investigations of the research impact of individuals. Before doing so, brief observations will be made about the role of research in relation to an expert's productive interactions. The feasibility of using self-documentation as a method for data collection in constructing an account of contribution will also be deliberated.

6.1 Research and an expert's productive interactions

As expected, the systematic description of Prof. Z's interactions revealed a blurring of boundaries between, on the one hand, research–stakeholder interactions and, on the other hand, interactions that seemingly lacked a research component. For instance, did the DPCI benefit from the doctoral research work of Prof. Z, or from his vast experiences shaped by a law enforcement background and previous employment with the South African Police Services (SAPS)? Although the analysis opted for the term 'research-based expertise' as a compromise between the two extremes, the boundaries are nevertheless blurred. SIAMPI has no problem with the blurring, given that it interprets 'productive' as implying not only the use of 'research results' but also the use of 'practical information or experience' (Spaapen and Van Drooge 2011: 212).

For many RIA approaches, however, research results are the starting point from which impact can be developed. For instance, in the Research Excellence Framework (REF) of the UK, each impact case 'must describe the underpinning research' (HEFCE 2011: 29). However, in the current study, the SIAMPI approach extended beyond the tracing of interactions that are associated with specific research results. More realistically, it traced the interactions associated with a collection of integrated 'knowledges' of an individual (research-based knowledge, experience, etc. [Boshoff 2014]). Through direct interactions with different stakeholders at different meetings and events, but also through indirect interactions, the integrated 'knowledges' of Prof. Z also interacted with those of others. This enabled the co-production of new knowledge to address a particular societal challenge in the transdisciplinary field of maritime piracy (Wagner et al. 2011). Should the stakeholder interactions become productive (uptake and use) and eventually impactful (change), the link back to the original research input would be very messy. First, the impact cannot be credited to the research conducted by Prof. Z because everything would be part of his integrated 'knowledges'. Second, the impact cannot even be credited to the integrated 'knowledges' of Prof. Z, because of the exchanges of integrated 'knowledges' between the participating stakeholders in the co-production of new knowledge. The complexity of co-production in maritime piracy is summarized by Prof. Z in the interview:

> You give your ideas together with other people and groups of people … Our delegation, we had discussed everything, come to a collective idea which we put on the table. So one can't say this is one particular person, one particular meeting, one particular idea. One discusses these things and it goes forward. […] You have ten people talking. They [stakeholders] may take one aspect from each of the ten people because, you know, you are influenced by what you hear, by the events that unfold. So you can't say, ah, because of that there this is, no, it's collective and progressive as well, as it goes along.

Thus, in the context of maritime piracy as a transdisciplinary field, particularly where direct interactions are involved, impact is underpinned not by research but by interacting sets of integrated 'knowledges' of stakeholders.

Last, opportunities for the integrated 'knowledges' of experts to interact always involve some costs. Although the coding exercise excluded the coding of financial interactions, the latter in fact enabled some of the most decisive direct interactions in this study. This particularly applies to Prof. Z's international attendances. His participation in the Madagascan conference (d04), the meeting of the WMU in Sweden (d14, d23, and d24), the lecture series of the media-based NGO in Ghana (d37) and the specialist committee of the United Nations in Austria (d38), were all made possible through support received from either the event host or another organization. Participation in these events also generated indirect interactions (i12 and i21). Therefore, not only the direct and indirect interactions turned productive but also—and probably more so—the enabling financial interactions.

6.2 Broader effects of an expert's productive interactions

The systematic description of Prof. Z's productive interactions in Section 5 revealed a number of benefits for stakeholders. These are summarized in Table 2. The benefits mainly reflect competences, capacity building, and changed agendas. The organizations that participated in the uptake or use were also those that benefitted immediately (with three exceptions—b01, b04, and b07b). However, the broader effects of these immediate benefits are beyond the interest of the SIAMPI approach. SIAMPI, as indicated before, is content with confining impact to immediate changes in the behaviour and settings of stakeholders that are linked relatively closely to the research or person of interest (Molas-Gallart and Tang 2011).

On the other hand, it is not the intention of this discussion to let the SIAMPI approach 'off the hook', so to speak, by arguing that because broader effects are less emphasized in SIAMPI they should not be addressed in an analysis that uses this approach. Figure 3 presents a framework that attempts to reconcile the productive interaction approach with a study of broader effects, based on the example of Prof. Z and the codes of benefits from Table 2. It distinguishes between two sets of interactions: those that include Prof. Z (set 1) and those that exclude Prof. Z (set 2).

The first set captures interactions between Prof. Z and stakeholders that are closely connected with his work (linked stakeholders). Linked

Table 2. Who benefitted from Prof. Z's productive interactions and how

Who took up and/or used?	Who benefitted from uptake/use? How?
International Maritime Organization (e01)	Prof. Z—Reputational; increased professional marketability (b01)
South African Police Services (SAPS) (e02)	SAPS—Increased awareness (b02)
South African Navy (e03)	South African Navy—Increased awareness (b03)
World Maritime University (WMU) (e04/06)	UK lecturer—Enriched research (b04)
	WMU—Increased visibility because of association with declaration developed (b06)
Priority Crime Investigation Directorate (PCID) in South Africa (e05)	PCID—Increased capacity (b05)
Media-based NGO in West Africa (e07)	NGO—Changed agenda (b07a)
	Participants at conference of NGO—Increased awareness (b07b)
State prosecutors in East Africa (e08)	State prosecutors—Increased capacity (b08)
United Nations Office on Drugs and Crime (UNODC) (e09)	UNODC—Increased understanding of multi-faceted social challenge (b09)
Global commercial shipping organization (e10)	Shipping organization—Increased awareness (b10)
North Atlantic Treaty Organization (NATO) (e11)	NATO—Changed agenda (b11)

stakeholders could be those who participated in the research and related work or those with whom the research findings were discussed (Kok and Schuit 2012). Linked stakeholders are always concrete, narrowly defined and tangible, i.e. specific individuals or specific organizational representatives. The 'specificity' of linked stakeholders (e.g. state prosecutors from Tanzania) allowed Prof. Z to interact with them directly. In Figure 3, nine of the 12 benefits resulted from Prof. Z's direct interactions with linked stakeholders, where the latter included representatives from organizations and special interest groups (thereby immediately benefitting those organizational stakeholders). However, Prof. Z also interacted with non-linked stakeholders, i.e. stakeholders that are distant from his work. In the case of non-linked stakeholders in the current study, Prof. Z interacted with them indirectly through publications and other material carriers. An example is the UK lecturer (non-linked stakeholder) who benefitted from interacting with the published work of Prof. Z (b04).

The second set of interactions in Figure 3 excludes Prof. Z. It involves interactions between various combinations of linked and non-linked stakeholders. Some of the interactions are underpinned by the work and interactions of Prof. Z in the first set, whereas others are not. An example of underpinning is the media-based NGO (linked stakeholder), which, through its disseminating activities, raised awareness about the work of Prof. Z among a group of conference participants (non-linked stakeholders) (b07b). Importantly, interactions that involve non-linked stakeholders are near essential for the creation of broader effects at the two highest levels of benefit (countries/communities and society), which together constitute the so-called 'quadrant of sought-after high-level effects' (Figure 3). In this quadrant, transformations in one or more high-level societal dimensions are typically expected (economic, environmental, health, social, etc.). However, the diffused and ultimate beneficiaries in this quadrant, seen from the perspective of Prof. Z, are mostly non-linked to his work. This raises an important question: what are the broader effects of Prof. Z's interactions or, rather, can the broader effects at the higher levels of benefit even be realistically identified, given that those beneficiaries are in no way straightforwardly linked to Prof. Z and his work, but only distantly linked through a series of unknown stakeholder–stakeholder interactions?

The answer is yes, provided that SIAMPI (as applied in this study) is extended to include follow-up, focussed case studies. The case studies would need to involve an approach that can best be described as downward linking. Downward linking means that a possible high-level benefit at a distance is first identified, whereafter the benefit is linked downwards towards Prof. Z and his work, by systematically exploring the overlap between the two sets of interactions in Figure 3. An example of an identified high-level benefit in maritime piracy could be the signing of a trilateral MoU between the governments of South Africa, Mozambique and Tanzania in early 2012. According to a press release, the MoU served to:

> ensure security and the free flow of goods along the East Coast of Africa from Tanzania, Mozambique through to South Africa. The trilateral agreement will see the three countries working together in securing territorial waters of each respective country. This includes the three parties sending members to participate in the combined maritime operations aimed at searching and interdicting bases of pirates and any other illegal activities in the territorial waters (DoD 2012).

The broader effects of the trilateral agreement—prevented or reduced incidents of piracy as well as enhanced national security—are all in the 'quadrant of sought-after high-level effects' in Figure 3. There might also be broad economic effects, such as reduced expenditure on prosecution and imprisonment related to acts of piracy and armed robbery on the East Coast of Africa (One Earth Future 2018). For purposes of downward linking, to show the contribution of Prof. Z to the MoU and its broader effects, at least one stakeholder that is linked with Prof Z or his work would need to be located in both sets of interactions in Figure 3. The actions, connections and contextual factors of the identified stakeholder would then become the focus for a follow-up case study. In the current study, an example of such a linked stakeholder could be the senior official in the South African navy who Prof. Z interacted with directly (coding element e03, Section 5.3) and who—based on additional information—also attended the signing of the trilateral MoU. Moreover, as is evident from the description of interactions in Section 5.3, Prof. Z initiated contact with the senior official to raise alarm about the potential threat of maritime piracy for South Africa, and in that way created an opportunity to present the findings of his doctoral research at strategic meetings involving that official. The window of opportunity would also not have opened without some of Prof Z's earlier interactions, as highlighted in Section 5.3.

To conclude, the SIAMPI approach as applied in this study—focussing on an individual and using documentary evidence—mainly

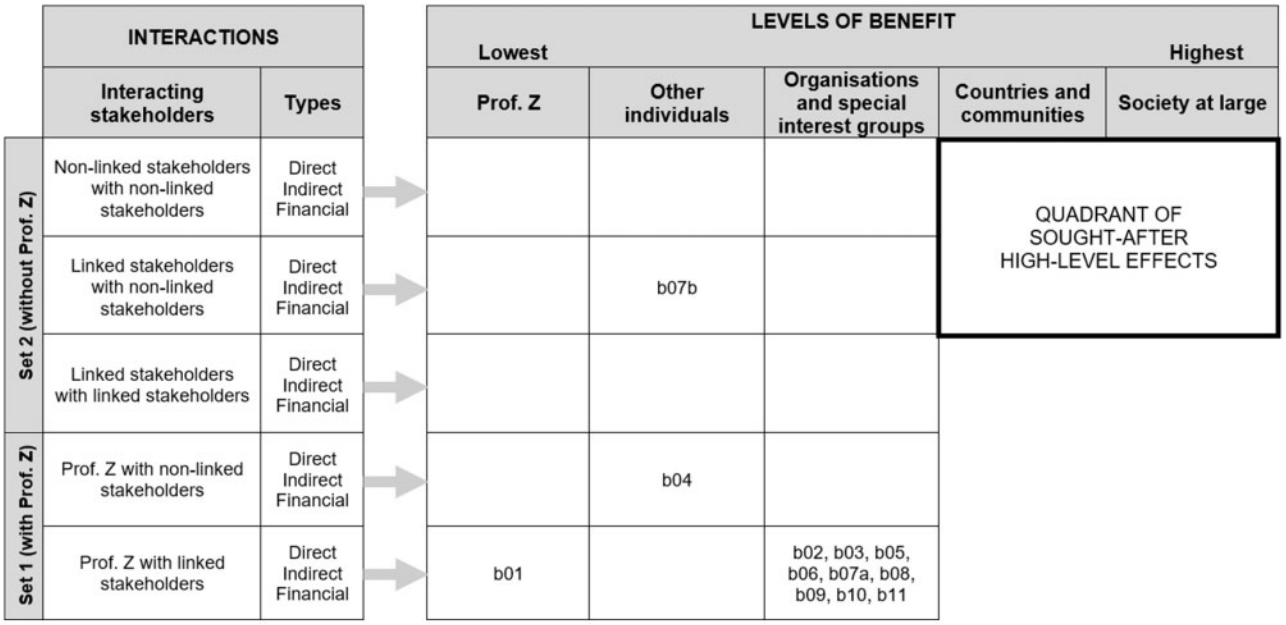

Figure 3. Framework that connects the productive interactions of Prof. Z with the different levels of benefit.

provided an account of interactions with linked stakeholders that turned productive. For SIAMPI to also adequately address the link between productive interactions and observed high-level transformations, follow-up case studies involving downward linking are needed. The case studies should focus on commonalities between different sets of stakeholder networks and make explicit the contributory roles of stakeholders. Arguably, the ASIRPA approach developed for RIA in agricultural research (Joly et al. 2015) performs such downward linking, while identifying productive interactions along different sets of interacting networks.

6.3 Self-documented evidence to identify productive interactions

The documentation provided by the study participant generated sufficient evidence to identify relevant productive interactions. However, the path dependency of some interactions only became clearer when additional information was sought through interviews. In fact, it turned out to be very difficult, if not nearly impossible, to construct a true narrative of contribution from the documentation alone. At best, the narrative generated from the documented evidence represents a chronicle. In other words, an account of events in their order of occurrences. Self-documentation as a form of data collection to trace productive interactions, although valuable, would therefore need to be supplemented with interview (or other) data. Documented evidence alone cannot portray the respective roles, motives, and agencies of different actors in a story of contribution. For that reason, an account of the social dynamics between actors is critically lacking in the current study.

Irrespective of whether the text to be produced from self-documentation is considered a chronicle or causal narrative, the processes of collecting, scrutinizing, and coding documents are time consuming and labour intensive. The accuracy of the account is also dependent on the availability of relevant documentation and the amount of effort put into collection. Self-documentation therefore cannot be recommended as a routine procedure for evaluators to adopt in the research assessment of individuals. Self-documentation also seldom occurs in a vacuum but is motive-driven, where the motive determines the criteria for inclusion. External verification will always be required. At the same time, it seems possible—as this study has shown—for those assessed to construct a first narrative of their interactions and to visualize it for ease of understanding.

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