

**DIFFERENT WORLDS? FINDING COMPLEMENTARITY BETWEEN RESEARCH
AND SOCIETAL IMPACT ACTIVITIES**

Working Paper

**Based on the report for ENRESSH STSM Topic 2.2b: Developing a synthetic mapping of
discourses on stimuli, barriers and hurdles of SSH impact generation (WP2)**

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Introduction:

Many studies concerning societal impact start with describing the changing role of universities in the context of their funding conditions. (Bornmann 2013; Hessels 2010; de Jong et al. 2016; Morris and Rip 2006; Blume & Spaapen 1988) From being self-evident, inside oriented, self-accountable institutions, whose funding is based on general belief in the usefulness of science, they become questioned, and the proof for their usefulness is required. (Olssen and Peters 2007) That means, that universities become accountable to outside institutions and they have to base their funding on the needs of society, either economic or well-being benefits. (Olssen and Peters 2007; Blume & Spaapen 1988; Gibbons 1998)

This change is claimed to be problematic for universities and especially – for scientists, who actually do research within universities. Although much of the research focuses on what these demands place on universities and their managers, it is clear that these societal demands are creating uncertainties amongst academics and scientists. Firstly, in the absence of a clear definition of what good societal impact is, researchers are puzzled about what precisely the expectations are of society on them (de Jong et al. 2016). Associated with this ambiguity, researchers both struggle to make their research relevant, or find good ways to explain to societal stakeholders how their research is societally relevant. (Hessels 2010) Finally, ideas of social impact of science are not uncontroversial, and many researchers including in the SSH fear the effects that this new societal mission will have for the overall scientific quality of their research. (Cherney 2015; Cherney et al. 2011; Haynes et al. 2011)

There is much literature and research on evaluation and measurement of societal impact of SSH. (Bornmann 2013; Frodeman and Briggie 2012; Greenhalgh et al. 2016; to name a few). Also when discussing about societal impact's generation – there are some studies, some challenges are mentioned and approaches for dealing with this suggested, especially in the context of capturing it within SSH for research evaluation. (de Jong et al. 2014; Benneworth & Jongbloed 2010; Olmos-Peñuela et al. 2014) But only few studies consider researcher's position within societal impact requirements on individual level and especially there is a lack of research in social sciences and humanities (SSH) and non-commercial settings. Much of the research on SSH impact is driven by

the different kinds of impacts that are produced: popularisation (Peters 2013, Kreimer et al. 2011), business engagement (D'este et al. 2013), scientists' response to policy (de Jong et al. 2016), on popularisation, teaching and collaborations (Jensen et al. 2008), on collaborations (Cherney et al. 2011), on influence in politics (Capano and Verzichelli 2016). Conversely, there is relatively little research that considers how the production of those impacts relates to the very different methods of knowledge production that are seen in the social sciences and humanities.

To provide general context for understanding researchers' struggles, literature review was conducted. The main question was, why and how academic researchers engage or not into societal impact generation, what dilemmas and struggles they experience within these requirements of societal impact and what ways they use to deal or overpass these struggles? The purpose of this literature review was to gather studies about academic researcher's (dis)engagement in societal impact activities, oriented towards individual level analysis, and make a summary on how researcher's dilemmas, struggles or stimuli in societal impact generation are portrayed and explained.

Methods of literature review

Literature review consisted of two main phases: (1) review of literature on societal impact of research in general, providing with background knowledge, and (2) search and analysis of literature specifically on researcher's (dis)engagement.

Literature review started from reading literature recommended by members of WG2 (Reetta Muhonen, Stefan de Jong) and search for publications in Web of Science, keyword "societal impact" (576 results). From these publications irrelevant (not discussing aspects of societal relevance of research) were dismissed, leaving with approx. 100 publications. After reviewing abstracts of those publications, topic of literature review was narrowed to academic researcher's (dis)engagement in societal impact activities, orienting towards search for individual level analysis. Relevant publications were selected, references of those publications reviewed and additional keywords – "social relevance" (427 results), "societal relevance" (141 results), "research valorisation" (3 results), "science-society interface" (19 results) – added to the search of literature. Of approx. 130 publications on societal impact, 20 were selected as relevant for the topic of researcher's (dis)engagement for further analysis.

Because of lack of research in SSH fields, studies about non-SSH fields also were included. Studies about non-individual factors, measurement and evaluation and other aspects of societal impact were excluded, except of the few, providing possible interpretations of the context of researcher (differences between disciplines and role of networks).

Results:

Patterns of engaging into societal impact activities

Although there may be a popular perception that academics prefer to remain in their ivory towers rather than engaging with the real world, the reality is that the studying of real-world phenomena means that academics are naturally engaged in their environments. (Shapin 2012) Research shows, that many scientists care about the relevance of their research and engage into activities of dissemination, knowledge transfer, collaboration with various institutions outside universities. (Jensen et al. 2008; Ylijoki et al. 2011, 730; Capano and Verzichelli 2016, 225; Haynes et al. 2011) As Jensen et al. (2008) stress from research in France (both on SSH and non-SSH sciences): „even in the institution hosting the most fundamental sciences, roughly half of the scientists are in close contact with society, i.e. popularize or look for funding outside the academic sphere.“ (Jensen et. al 2008, 16)

Although, in some cases researchers themselves express concern that there is too little involvement in society's issues. (Capano and Verzichelli 2016, 226) Also funding for basic research has been falling across developed countries in recent decades, and governments have expected universities to make up for this shortfall by acquiring funding from external sources. This has meant in practice that academics and universities find themselves under pressure to orient their research towards more relevant topics of interest to these users (Hakala & Ylijoki, 2001).

Also it is important to note, that although for the purpose of ENRESSH we are considering SSH as if it is a homogenous scientific community, the reality is that engagement varies along a number of axes. There are differences between fields, between SSH and non-SSH, but also within SSH, for example in arts research in which practice and research are often indistinguishable (Hazelkorn 2014). Institutional settings also matter, particular the kinds of formal institutional

support that is given as well as the informal engagement cultures within different kinds of institution (Olmos-Penuela et al., 2016). Finally, there are differences that reflect individual differences, whether more personal in nature (age, gender) but also seniority and position.

Societal relevance is usually more important in social sciences and humanities than natural and technological sciences. Ylijoki et al. (2011) reports that societal relevance when choosing the topic is important for 37 % (in natural sciences) to 72 % (in social sciences) of research departments' heads in Finland. SSH scientists involve more into popularisation activities, than non-SSH. (Ylijoki et al. 2011, 731; Jensen et al. 2008, 4) Also in social sciences almost half or researchers consider practical professionals of the field as important audience. (Ylijoki et al. 2011, 730) But SSH are less involved into industrial collaboration. (Ylijoki et al. 2011; Jensen et al. 2008, 4)

Institutional settings, department's strategies and context also matter. Certain arrangements within structure and organization of research unit affects, at least, amount of collaborations. (Boardman and Corley 2008) In certain departments or research organisations collaboration or popularisation activities might be more stressed, than in others. (Haynes et al. 2011, 1051; Morris, 2003, 367; Hessels 2010, 186)

Differences are found not only between fields, but also according to the status of an academic. It is noticed, that senior academics participate more in dissemination and entrepreneurship activities than junior academics, (Jensen et al. 2008, 13; Ylijoki et al. 2011, 723) engagement depends also on organisational affiliations, gender and age. (Jensen et al. 2008, 8) It can be explained by work divisions – junior staff do mundane work while professors disseminate (Jensen et al. 2008, 13), career path – younger researchers are in need to be active in academic research and publishing, (Ylijoki et al. 2011, 723) confidence in your own expertise and symbolic capital – senior academics are more known to mass media and have more contacts to be involved in various activities. (Jensen et al. 2008, 13) So we see social and cognitive hierarchies here. (Jensen et al. 2008, 13)

Many kinds of explanations that are offered of academics not engaging, but they tend to be totalising (talking about academic communities, institutions and policies) and do not reflect these differences. So the purpose is to understand these differences at the individual level, that is, why certain academics in certain departments choose (not) to engage into activities of societal relevance? It might be divided into two main types of explanations: motivation and structural conditions.

Motives and stimuli for engagement

Scientists have various reasons for engaging in societal impact activities. It may be summarized into four main groups:

- a) personal satisfaction – either because of the interest in problem and curiosity (Hessels 2010, 12; the concept of „puzzle“ in the terms of Lam 2011), or because of the feeling of contribution to society („informing the public“, Jensen et al. 2008, 16; Hessels 2010, 12; Cherney et al. 2011, 25), or because of the pleasure of interactions with outside audience (Jensen et al. 2008, 16) – aspects of intrinsic motivation;
- b) financial incentives and rewards – mostly in the form of research funding, when internal university funding lessens and external funding is sought (Ylijoki et al 2011; Hakala and Ylijoki 2001) and/or when societal impact is one of the funding criteria (Hessels 2010, 12); also it is in the case of commercialisation (Lam 2011);
- c) other kind of benefits and resources it gives, for example, new insights for research, contacts and networks, visibility (Jensen et al. 2008, 13); data access, career prospects (Cherney et al. 2011, 25);
- d) scientific recognition – idea, that research with societal impact might be evaluated within scientific field as important and provide points for reputation (Hessels 2010, 185-186; Lam 2011).

Nevertheless, when considering these aspects separately, the most important point is missed. Most of the research shows, that the main stimuli for engagement into societal impact derives from dynamics of academic community. Scientists are not driven by financial rewards so much, mostly they care about recognition or about interest in the topic. (Lam 2011; Hessels 2010, 71) And interest in financial aspect appears as an additional or as the approval of reputation and condition to do research. (Lam 2011; Hessels 2010, 12) It can be described by the concept of credibility cycle (by Latour and Woolgar): if you want to participate in science, you do research, for research you have to have funding, in order to have funding, you have to have reputation and recognition, to have reputation you have to publish results and you have results if you have data and do research. (Hessels 2010) So the strongest motivation for scientists is still the scientific work, because of recognition and intrinsic motivation to solve scientific problems.

But this kind of interpretation suggests artificial distinction of engagement and research practices. This is not always a case, there are many academics and researchers who engage with various societal stakeholders as a regular part of their research (Hessels 2010), but the idea of impact runs the risk of making that seem exogenous. At the same time, there is a whole set of discursive practices that contribute to this exogeneity, and one of these is the credibility cycle, so although engagement may be an important part of practices that an individual carries out as part of their research, the credibility cycle means that those practices are not seen as being important, they are valued only as a means to an end, the end being excellent research.

The need to stress societal impact in this process of research in this case comes from two reasons: (1) engagement in societal impact activities has a value within scientific community or (2) it is a condition to scientific work. Some researchers believe in their duty for society (Chapman et al. 2014, 264), some notice, that participation in publics provides more influence and in that way gain reputation (Chapman et al. 2014, 266), some see commercialization as a proof for the success of their work (Lam 2011, 1355) – societal impact provides recognition. In those cases where societal impact do not provide recognition, it provides conditions for doing research – that is, funding, data access or contacts needed – and doing research helps to get scientific recognition. (Hessels 2010, 167)

Also when discussing importance of different audiences for scientists, Ylijoki et al. (2011) stress, that academic market do not loose it's value, it is the most important, although complemented by other markets. Science, scientific community are still the main criteria for grounding of research, even if a bit managed within relevance requirements. (Morris and Rip 2006; Morris 2003)

Hurdles for engagement

Although there are cases where engagement can be integrated within good research, it does not always fit seamlessly within research practices that are seen as being good or desirable. Besides (in some cases) being a source and meaning of scientific work, societal impact generation might be seen in conflict with it.

For the purposes of this working paper, we make a clear distinction between two kinds of barrier to impact (although it is not so separate in practice). Firstly are those that arise out of some kind of idealistic opposition to some facet of engagement, and the impositions that it brings.

Secondly are those that arise because engagement is one of many choices that academics are forced to make in extremely pressured environments and in which engagement becomes a victim of the trade-offs of academics trying to undertake ‘good’ research.

Separate worlds – idealistic tensions

There are idealistic tensions that arise in engaging with different kinds of worlds beyond those of the academic. It brings pressures that can lead academics to feel it is undermining what it means to do a ‘good’ research.

Scientific community is seen as a separate world from other audiences in many aspects. (Haynes et al. 2011, 1050; Ylijoki et al. 2011; Williams and Pierce 2016; Cherney et al. 2011, 10) What is important in academia – that is, publications of high-quality innovative research – is said to not always be significant for business, policy-makers or general public. (Haynes et al. 2011, 1050; Hessels 2010) Scientists are said to put excellence over relevance in research, (Morris 2003, 363) although not in all fields (as mentioned before, societal relevance in social sciences is important, Ylijoki et al. 2011, 728). Also certain principles of generating knowledge are different, so the imposition of external requirements can create a tension with what the researcher thinks is good research. Few important external audiences can be mentioned: business and industry, politics, professional practitioners, media in particular and general public.

Business and industry

First, it is important to mention, that in SSH it is less common to engage into collaborations with business and industry, it is usually the domain of technological sciences, but to some extent it can happen in social sciences too. (Ylijoki et al. 2011; Jensen et al 2008, 4; D’este et al. 2013, 488; Cherney et al. 2011, 12) Few concerns of collaborating with business and industry are expressed: not possible to control results, (D’este et al. 2013, 482), delay or inhibition of publishing results in scientific journals, because of commercial secret policy, (Hakala and Ylijoki 2001, 377; D’este et al. 2013, 482) legal issues of contractual arrangements (Cherney et al. 2011, 10), different research orientations and contradiction in knowledge creation – slow theoretical vs fast applicable (Hakala and Ylijoki 2001, 377; Cherney et al. 2011, 10). Although there is not so much concern about overemphasis on applied results, (at least in social sciences, Cherney et al 2011, 11) and in some cases it is even in line with scientific interests. (as in the case of catalyst chemistry in Netherlands, Hessels 2010, 172) Also there might be a certain stereotype about entrepreneurial scientists, that they can undermine idea of scientific recognition by peers in exchange for money, especially in

SSH, issue of a ‘researcher for hire’, when companies hire social scientists to do research, but it’s quality is questionable. Although some research shows, that it is not such straightforward process, commercial values not necessary undermine scientific, orientations of scientists are usually more mixed, and even within entrepreneurial type money is not the main stimuli. (Lam 2011, 1354) So the worlds of private enterprise and scientific community have different principles, which might be summarized as open vs secret knowledge, theoretical vs applied results, slow vs fast research.

Governmental institutions, professional practitioners

Cooperation with governmental institutions and professional practitioners is much more usual in social sciences, than cooperation with business. (Ylijoki et al. 2011) There are some similar issues as in collaborations with industry sector. One of the problems expressed is different needs of academic researchers and experts in practice, that is, „[a]cademics favour being methodical and systematic, focusing on data quality and methods, while policy-makers or practitioners are more action orientated and concerned with timeliness and relevance“. (Cherney et al. 2011, 10) But in fact, social scientists are aware of the needs of end-users and care and are able to tailor research results, that is, provide summaries, be „clear, concise and timely“. (Cherney et al. 2011, 25) Also social scientists do not share a belief, that practitioners might want favourable results, they think, that for end-users in this sector scientific quality is important and that they are interested in results of social research. (Cherney et al. 2011, 25)

Politics

Although informing politics is seen as important task for an academic, (Haynes et al. 2011, 1050; Chapman et al. 2014, 264; Capano and Verzichelli 2016; Williams and Pierce 2016) two main concerns are expressed about this kind of communication:

(1) Differences of discourses. (Williams and Pierce 2016; Haynes et al. 2011, 1051; Capano and Verzichelli 2016, 214) It is stated, that there is „the intrinsic incommensurability of scholarly and everyday political discourses“ (Williams and Pierce 2016, 223), because everyday politics discourse make use of ambiguity of meanings, while scientific discourse relies on precision and clarification – they are of contradictory nature. (Williams and Pierce 2016, 225) Also there is an issue about the tensions of expertise in SSH fields – academics in these fields do not produce clear results on defined objects, rather they are experts about and give opinions on the topic. Not being able to state clear conclusions and suggestions for application, contradicting interpretations of results in SSH make it unattractive for politics (Capano and Verzichelli 2016, 214) and can make

academics in these fields reluctant to engage for fear of being criticised for going beyond their remit.

(2) Issue of neutrality. (Haynes et al. 2011, 1050; Capano and Verzichelli 2016, 229) There is a belief, that advocacy in politics might threaten the integrity of science, because of this rhetoric – exaggerations, simplifications – and because of possible bias. (Haynes et al. 2011, 1050, although at least in public health approx. half of scientists disagree with that) For example, in political sciences in Italy there is a strong rhetoric of neutrality, used to legitimise their position as science, but inhibits possibilities to effectively influence politics (Capano and Verzichelli 2016, 229) In critical theories there is some concern expressed about limiting research to political goals, that it will constrain topics and discourage critical thinking and questioning of status quo. (Williams and Pierce 2016, 224)

Media

There is some distrust in media among scientists. (Chapman et al. 2014, 262) Few reasons might be mentioned:

(1) Specifics of media communication. (Chapman et al. 2014) Messages in media tend to be simplified, framed, biased, sometimes research results are even misinterpreted and presented falsely, principle of neutrality is undermined. (Chapman et al. 2014; Haynes et al. 2011, 1052; Capano and Verzichelli 2016, 229) It especially affects SSH, and particularly arts and humanities, where the researcher is usually a talking-head expert who opines on something they know about, but it is not much of a story of research discoveries, which can be told in STEM.

(2) Myths about those, who appear in media. They are seen as selling out, seeking attention and not good enough for academic career, and engaging into media for that reason, although research shows, that it is not truth. (Chapman et al. 2014, 262; Haynes et al. 2011, 1052; Jensen et al. 2008)

(3) There is a lack of good relationships and contacts with journalists. (Chapman et al. 2014, 262)

(4) Lack of competences of communication with media. It usually requires specific abilities, that is, establishing connections with trustworthy journalists, selecting acceptable channels, learning to get their message into simple, strongly opinionated, framed form – ready to use for the media. (Chapman et al. 2014; Haynes et al. 2011, 1050) It is usually not trained in academia, so many scientists are not confident in their ability to communicate in media. (Chapman et al. 2014, 262) Nevertheless there is an understanding, that if you want to reach significant audience there is no

better place, that's why some scientists accept the trade-off and engage into it, while managing conflicting requirements. (Chapman et al. 2014; Haynes et al. 2011, 1050)

General public

General public as an audience attracts least attention from the most of the fields. (Ylijoki et al. 2011) Some issues might be common to these of other audiences – problems of impartiality, need to translate research results into simple form. But the main reason of it's irrelevance is that it has no resources. (Ylijoki et al. 2011, 735) Public research is considered valuable, but it is least resourceful of all the audiences and is rarely funded. (Hakala and Ylijoki 2001, 378) It requires additional time and efforts, which is hard under the pressure of other funding sources. (Hakala and Ylijoki 2001, 378) Also Hakala and Ylijoki (2001, 367) mentions problem of locality – it is hard to frame research, oriented towards general public, as academic not only because of its applied profile, but also because of locality and language: in scientific research there is a requirement to orient to international audience, that is, publish results in English, while for general public local problems are more relevant and results must be published in local language for accessibility.

So values of scientific research, as to be methodical and systematic (it requires time), more theory oriented, international, detailed and complicated, neutral and critical often contradict with values of outside audiences, that is to be fast, applied, opinionated and easy to understand.

Limited resources – opportunistic tensions

Science is always done in a scarce environment with resources being limited, and so trade-offs are continually being made in pressurised academic conditions. Social engagement can be an important element of some kinds of research, but for other kinds of research where this is not necessarily the case, then it can involve a lot of additional work, and there is not always a lot of understanding of the additional work that this may bring. (Landry et al. 2010, 1390; Cherney 2015, 1014; Hakala and Ylijoki 2001, 377; de Jong et al. 2016, 9) For example, Cherney et al. (2011, 8) mentions difficulties of coordinating work between partners or delays because of contractual arrangements. Also establishing relationships for collaborations, research translation, dissemination, communication with media or public requires additional time. (Cherney et al. 2015, 1014; Cherney et al. 2011)

Additional problems are caused by local vs international research orientation. (Hakala and Ylijoki 2001, 367) There is a question, does an academic spend their limited time trying to write a book in the local language for the general population or in English for the academic community.

This decision of time allocation for societal impact activities depends a lot on career prospects. (Cherney et al. 2011, 8) Academic reward systems are mostly oriented towards scientific publications and do not recognize dissemination activities or practical outputs. (Cherney et al. 2011, 8; Cherney 2015, 1013; Morris and Rip 2006; Haynes et al. 2011, 1054; Hessels 2010, 7; de Jong et al. 2016, 8) So if researchers want to make a scientific career, they must dedicate they time for scientific outputs. It especially affects junior researchers in the beginning of their careers. (Ylijoki et al. 2011, 723)

Although we make a conceptual distinction between the opportunistic and idealistic reasons for not engaging, there is a link between the two. Scientists have an ends-driven rationality for research and a means-driven rationality for engagement; if they are under pressure and forced to make decisions about what they do, then engagement is less important to them, so they will do less of it, they downplay what they do of it, and so it becomes more invisible. So although we are here making a distinction, a key point here is that there is dynamics between these two elements.

This dynamics leads to explanation, how this tension within idealistic and opportunistic reasons can be solved in building complementarity between research and engagement.

Endogenous integral academic impact by building complementarity

These worlds of academic and extra-academic audiences are not completely incommensurable. Keeping in mind those contradictions, it would be logical to think, that researchers would not engage in social impact activities at all or that those, who engage, would be not so successful in academic activities. But, as it was elaborated above, there are many scientists, who engage into societal impact activities. Also those, who perform well in social engagement activities do not necessary are worse in academic performance: there is no connection between academic excellence and business engagement within a field (D'este et al. 2013), and even there is positive connection between being active in academic publishing and engaging into popularisation, industrial collaboration and teaching (Jensen et al. 2008).

In some cases scientific world is not incommensurable with other worlds, a researcher can be rewarded for societal impact activities within scientific community itself and scientific activities might include societal impact activities. There are two kinds of explanations, a bit already commented in descriptions of audiences: either there are strategies and efforts to solve these contradictions or there are no so serious contradictions, at least in some structural conditions.

One concept to explain this would be of complementarity. (Landry et al. 2008) Scientific and societal impact activities are not necessary in conflict with each other, they might be complementary, which means, that doing one activity increases the returns of doing other. (Landry et al. 2010, 1389) For example, industrial collaboration provides topics and data, which give opportunity for research, which can be published in scientific journals (Hessels 2010, 172), this research can inform consultancy and teaching activities (Landry et al. 2010).

Although as it was mentioned before, it depends quite a lot on institutional settings, field and status of the person – in some cases it is complimentary, in others – not. (Landry et al. 2010, 1397; Hessels 2010; Jensen et al. 2008, 13; Ylijoki et al. 2011) So the solution of contradictions between different audiences would involve building complementarity so that impact is not additional and exogenous but integral and endogenous.

There are some efforts put to cross these differences, that is, to build complementarity, in individual, relationships or institutional levels. So explanations include those of personal identity and efforts, networking or specific settings or strategies of research bodies.

Personal identity and efforts

Certain personal identity of academic and understanding of their own role explains much of the engagement – active and passionate individual, who is putting efforts to get outside scientific audience, because of all the mentioned motivations and besides all the hurdles. We can talk about certain kind of active personality – that is, if a person is active in scientific publishing, he or she is active in societal engagement too. (Jensen et al. 2008, 13) As in some of the studies was expressed, difference of audiences can be acknowledged and other type of identity taken, not of traditional scientist, but of a translator or entrepreneur. (Haynes et al. 2011, 1049; Lam 2011) This kind of person both see his or her duty to engage into external audience *and* does it, because know how and is able to solve differences. Some of possible individual strategies for it are mentioned above, for example, responding to policy opportunities, consulting with stakeholders, putting efforts in understanding the needs of users and adapting reporting strategies, finding ways of communicating

with media, being ready for collaborations and keeping relationships with people in other institutions. (Cherney et al. 2011; Haynes et al. 2011; Chapman et al. 2014) These strategies can be used opportunistically, in order to get funding, by traditional scientists too, putting them in the „mixed“ position. (Lam 2011; Morris 2003) In some cases it is even stressed, that keeping „pure“ identities within discipline, not having „mixed“ types might be one of the main reasons of not engaging into publics. (Capano and Verzichelli 2016) One example of this kind of strategy is of those, who work not only in academia, but also outside – they provide possibilities to combine scientific research with practical outcomes. In some cases this kind of position – intermediary – might be even established institutionally (for example, knowledge brokers, Pennell et al. 2013, knowledge and innovation transfer agents, Bullock et al. 2016)

Informal links or networks

Informal links or networks – established relationships between academics and external audiences usually helps in crossing the gap. (de Jong et al. 2014; Spaapen and van Droge 2011; Olmos-Penuela et al. 2014; Cherney 2015, 1007) It can be with policy-makers – conversations with them is claimed to be much more influential, than simple reporting (Haynes et al. 2011, 1052), with journalists – to be asked to provide information and ensure information quality (Chapman et al. 2013, 268), industry partners – work in common projects is better with those, who you trust. (Cherney 2015, 1007) Trust is said to be very important for collaborations to be successful, to be sure, that contractual arrangements will be held, that results will be used in a consistent manner, that certain tasks can be delegated to partners, that is why long-lasting, friendship-based relationships work much easier. And it has self-perpetuating effect within societal impact activities – having relationships help to engage into societal impact activities and societal impact activities strengthen relationships – it increases researchers reputation in this area in general. (Cherney et al. 2011, 25)

Institutional settings

In some cases certain institutional settings help researchers to engage into societal impact activities. For example, research centers, where researchers from various institutions are together, are encouraging researcher at least to not work alone, but to collaborate within interdisciplinary environment (Boardman and Corley 2008), although it does not necessary increase amount of extra-university collaborations. (Boardman and Corley 2008) Some departments or research organisations intentionally maintain collaborations with government, NGO's, industrial partners or other stakeholders and orient their strategies towards policy objectives or needs of other users,

encouraging scientists to take on research, which is relevant (Haynes et al. 2011, 1051; Morris, 2003, 367; Hessels 2010, 186). Also it might be in more informal level, for example, collaborations of scientists themselves into mixed research groups, where are more „traditional“ type researchers together with more „translation“ type researchers. (Haynes et al. 2011, 1050) In some studies it is expressed strong need for institutions to not inhibit networking possibilities and invest funding and attention into dissemination and translation activities, so that it would not be additional unpaid work. (Cherney 2015, 1014; Martinez et al. 2010, 24)

These differences lead to considerations about structural conditions – why it is easier for those in certain fields and of certain status to combine scientific and societal impact activities? This is discussed below.

Scientific community and complementarity in practice

There are some practices and activities, that can be promoted, that help to encourage academics to make engagement and impact complementary within their research, therefore make it endogenous-integral rather than exogenous-external to scientific work.

As it is stated above, the main motivations for scientists is that of scientific recognition or possibility to do science and the main stimuli derives from scientific community itself. So for scientists to be motivated to engage into societal impact activities, helps, when community approves this kind of research, when societal impact provides recognition and/or conditions to do scientific work. It can be either because this criteria of societal impact is internal within scientific community as such or it is given as external condition for getting funding – that is, possibility to do science depends on engaging (or declaring to engage) into societal impact activities.

Internal motivations for societal engagement

It can be internal in scientific community of researchers to do relevant research. In some cases, scientific research is so integrated with practical field, that it generates rewards both in scientific and in external field, for example, catalyst chemistry in Netherlands get their topics and data from industrial collaborations, and their scientific publications are based on this kind of applied research, practitioners in their area even visit scientific conferences (Hessels 2010, 172); this might

also be the case in technological sciences (Ylijoki et al. 2011). Although it do not solve the problem of delays of publishing because of commercial secrecy.

Also there are cases, when engagement in societal impact activities do not help to generate formal scientific recognition, that is, it is in the conflict with a requirement to publish in academic journals, but it is appreciated and encouraged within scientific community. As it was mentioned above, many scientists care about societal impact of their research. (Jensen et al. 2008; Ylijoki et al. 2011, 730; Capano and Verzichelli 2016, 225; Haynes et al. 2011) In so called divergent disciplines, (or fragmented adhocracies, as social sciences are, de Jong et al. 2014, 10) that is, where it is more divergence in topics, small amount of researchers engaging in those, so less competition, but also low citation density, there is a need to be evaluated not by quantity of scientific outcomes, but on other criteria, and one of these might be societal relevance, and it can be accepted both in formal (external) and informal (internal) evaluations. (Hessels 2010, 185-186)

External motivations for academic impact

Societal impact might be not internal, but external criteria, and it is the statement, which is mostly expressed in studies on societal impact of research. Scientific community can be forced into engaging into societal impact in order to get funding. This by some researchers is described as a „struggle“ (Hessels 2010), by some – as „coping“, „managing“ or „compromising“. (Morris 2003; Morris and Rip 2006) It might get scientists in contradiction within mentioned credibility cycle, when they in order to do research they have to get funding, but for funding they need to stress societal relevance, while for getting recognition out of research they have to prove scientific value for their peers – it puts them in contradiction within requirements, unless internal conditions of the field let to combine these. (Hessels 2010)

But scientists have various strategies to deal with those contradictions, especially when mentioned institutional settings are established, and usually it is perceived not as compliance, but as adaptive behaviour. (Morris 2003) If societal impact is required to get funding, and funding is the main need for research, thinking of it in order to get funding associates engagement practices with good academic research practices. Also Morris (2003) states that scientists are still quite a lot evaluated by their peers, even in societal impact requirements, so they to certain extent can avoid strictness of these and formulate their research goals quite loosely, and research councils are especially effective when negotiating those contradictions. Scientists find ways to keep their intellectual independence by holding to the idea Science and scientific community as main criteria

for legitimacy of research, having multiple funding sources and managing them, balancing within requirements of different funding, putting already existing relationships within the concept of societal relevance, compromising between their scientific interests and funders' interests. (Morris 2003; Morris and Rip 2006) So they do not lose their identity as independent scientists, they do not step out of traditional science, but just incorporate some elements of management and resource mobilisation. (Morris 2003).

Although within external requirements, as Morris and Rip states: „for the majority of scientists the concern was, and is, less about the principle and more about the degree to which the link between research and benefit might need to be direct and demonstrable.“ (2006, 258) The quite similar conclusion is expressed by de Jong et al. (2016) – usually scientists engage into societal impact activities, but do not know it or do not know how to show it in research evaluation – it is a paradox in communication between policy-makers and scientists. Also perceived contradiction is not with societal impact requirement as such, but with its externality, being top-down. This might be experienced as policy alienation – psychological disconnection with imposed policy, because it is associated with powerlessness (not being able to control conditions and principles of own work) and meaninglessness (not believing in goals of own work). (Tummers 2012) Autonomy is crucial in their work for public professionals (Tummers 2012, 257) and for academics too. (Morris 2003)

Conclusions and discussion

There are two main points from this analysis – intertwining of opportunistic and principles decisions, which leads academic to trade-off position, and solution to it, resting in academic identity, which perceives complementarity between good research practices and engaged research practices.

Barriers to engagement come about because of a vicious dynamic between practical and idealistic issues. Picturing academic researcher's engaging into societal impact activities as somehow difficult and challenging is inseparable from the idea of „different worlds“, expressed in much of the research, discussed above. It takes efforts, time, attention and skills of a scientist to cross this boundary between scientific and extra-academic audience. It produces struggles and

uncertainty when crossing this boundary is required. Academics are under time pressures and so have to make trade-offs about what they do. In this situation engagement is seen as being a means to an end and not an end in itself, so it suffers from these trade-offs.

Most of researchers want to be recognised within scientific community and external requirement to produce societal impact might be seen as a threat to autonomy. But this should not be totalised – it is only the case, when scientific and extra-scientific worlds are perceived as separate and when engagement is seen as being additional and not integral part of good research. Many of researchers believe, that societal impact is important and despite difficulties engage into it. And while there are communities and institutions, oriented exclusively towards pure science, and interested into societal impact only as an external requirement for funding, there are also communities, where application of results to societal problems, research collaborations, communication with practical professionals and more general public are essential part of scientific work. This principled decision in trade-offs between scientific work and engagement in turn highlights the fact that this distinction is a part of academic identity and so improving engagement is that you need to change academic identities, and in particular, to ensure that the identities perceive complementarity between good research practices and engaged research practices.

So to solve the problems you have to break this vicious cycle, and this means finding various kinds of complementarities that can be built so that engagement becomes part of the academic identity of good research, as well as just having the time to do the engagement activity, and that can be individual, in networks, and within institutions. These can configure academic motivations to combine the two, and then over time engagement will be seen as a normal part of academic practice.

There can be noticed serious limitation of this kind of research – societal impact discourse is driven by natural and technological fields and it results in limited understanding of how societal impact can be reached in SSH communities. Because of the concentration on non-SSH fields, there is overemphasis on collaboration with business, innovation, commercialisation, which leads to economical and quantitative definitions of societal value. While in SSH fields engagement with stakeholders from governmental sector is much more common and popularisation activities for general public are more important. It is even more limited, when considering, that collaborations in SSH tend to be informal, that is, not registered in any formal document and harder to capture in research. (Castro-Martinez et al. 2010, 23) Because of all those reasons, collaboration with „public“, which might be important for SSH fields, is overlooked in previous studies. This leads to

biased image of societal impact generation and possibly leads to view, where scientific and „outside“ worlds are strongly separated. Although it can not be claimed without further research into SSH fields.

Limitations

Limitations of research strategy, which affected results, omitting some alternative insights on researchers' position within societal impact requirements (or absence of them):

- use of English language led to omitting certain national contexts;
- books were not considered as a main source of information; keeping in mind, that in SSH big part of research is published in books, not journal publications, it certainly limited results.

There are limitations for making conclusions for SSH researchers – there were quite few publications, concentrated on SSH fields. But most of the implications for results were considered in the text and there is a question, how big the differences are in this area.

Suggestions for future research

There is a lack of studies, especially of qualitative nature, on individual level of SSH fields. They can be distinguished from non-SSH fields by their divergent nature, soft knowledge, communication with general publics and care for societal relevance in general. It would be interesting to understand if and how strongly societal impact aspects are internal in research to SSH communities. Also more knowledge in differences within SSH disciplines would be beneficial. Following conclusions made from this review, it would be especially valuable to study the issues of academic identity and the ways that academics value engagement practices and perceive their scientific validity in terms of undertaking 'good' research.

Another aspect – studies of qualitative nature about scientist's (dis)engagement into societal impact activities are usually concentrated on success cases – that is, when societal impact is generated, but there is a lack of attention to those, who do not engage into societal impact and what barriers they experience (except of the mentioned systematic study in nature sciences by Hessels 2010).

Policy implications

Main issue in (dis)engagement of individual academic is the question of identity, so goal would be to ensure that academics are willing to and have opportunities to use their skills for impact generation.

A key moment in the academic identity formation process is the Ph.D. so actions could be taken to ensure that academics have the chance to perceive engaged practices as valid and important in the course of their Ph.D. processes; for example, initiative of the AHRC New Generation Thinkers stimulate researchers and provide access to media channels along with media coaching (and to a lesser extend the Dutch Bessensap scheme).

Additional measures could include establishing support systems within universities or research centers: possibilities for networking, skills' improvement within communication with media, intermediary positions for outside communication and management of collaborations, financial support for dissemination activities. Special attention here should be for junior researchers, because as they have more structural limitations, connected to managing their career within scientific community.

Scientists' practical outputs and dissemination could be included within universities into evaluation and career assessment at least as an additional criteria.

Research evaluation within the context of societal impact should not be limited to quantifiable outcomes, recorded in official documents, because SSH impact is overlooked in this approach. SSH would benefit from including self-reporting and qualitative data.

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