Linking open research practices to researchers' portfolio of activities: an exploratory study from the Spanish context

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Motivation

- Researchers are increasingly asked to conduct research that can achieve ***societal impact*** (Hessels et al., 2009; Friesike et al., 2018).

- Increasing pressure to evaluate the societal impact of academic research (Perkmann et al, 2013).

- However, societal impact is unlikely to occur if ***knowledge*** produced through research is not ***pertinent*** and ***relevant*** to address socioeconomic issues (beyond academic interests).
  (Perkmann et al, 2013; Amara et al., 2019).

→To contribute to the literature on knowledge production (e.g. 'Mode 2' - Gibbons et al., 1994; Post-academic science - Ziman, 1996; Triple Helix - Etzkowitz and Leydersdoff, 2000)

→We focus on exploring research ***micro-practices*** that academics may conduct to make their research results *more societally relevant and pertinent.*

Conceptual background

- Researchers have a high degree of *freedom* and *autonomy* to establish their research agenda (Tartari and Breschi, 2012).
- Individual decisions related to *academic activities* ***may be influenced by non-academics*** in research practices *where* there is a degree of codetermination that may guarantee knowledge societal relevance.
  Kitcher (2001) identifies 3 micro-practices:
  - agenda-setting and choice of questions – *inspiration micro-practice*
  - execution of the project – *execution micro-practice*
  - research findings transformed into practical outcomes – *codification micro-practice*
- We *expand* Kitcher's micro-practices and include 2 additional micro-practices: *planning* and reframing (D'Este et al., 2017; Neff 2014).
- We propose the concept of '***openness***' to describe researchers' willingness to take into account external (non-academic) influences in their research process.

‘Openness’ throughout the research process

Inspiration : the researcher may be inspired by users or external issues to decide their research questions and agenda (Kitcher, 2001, Stokes 1997).

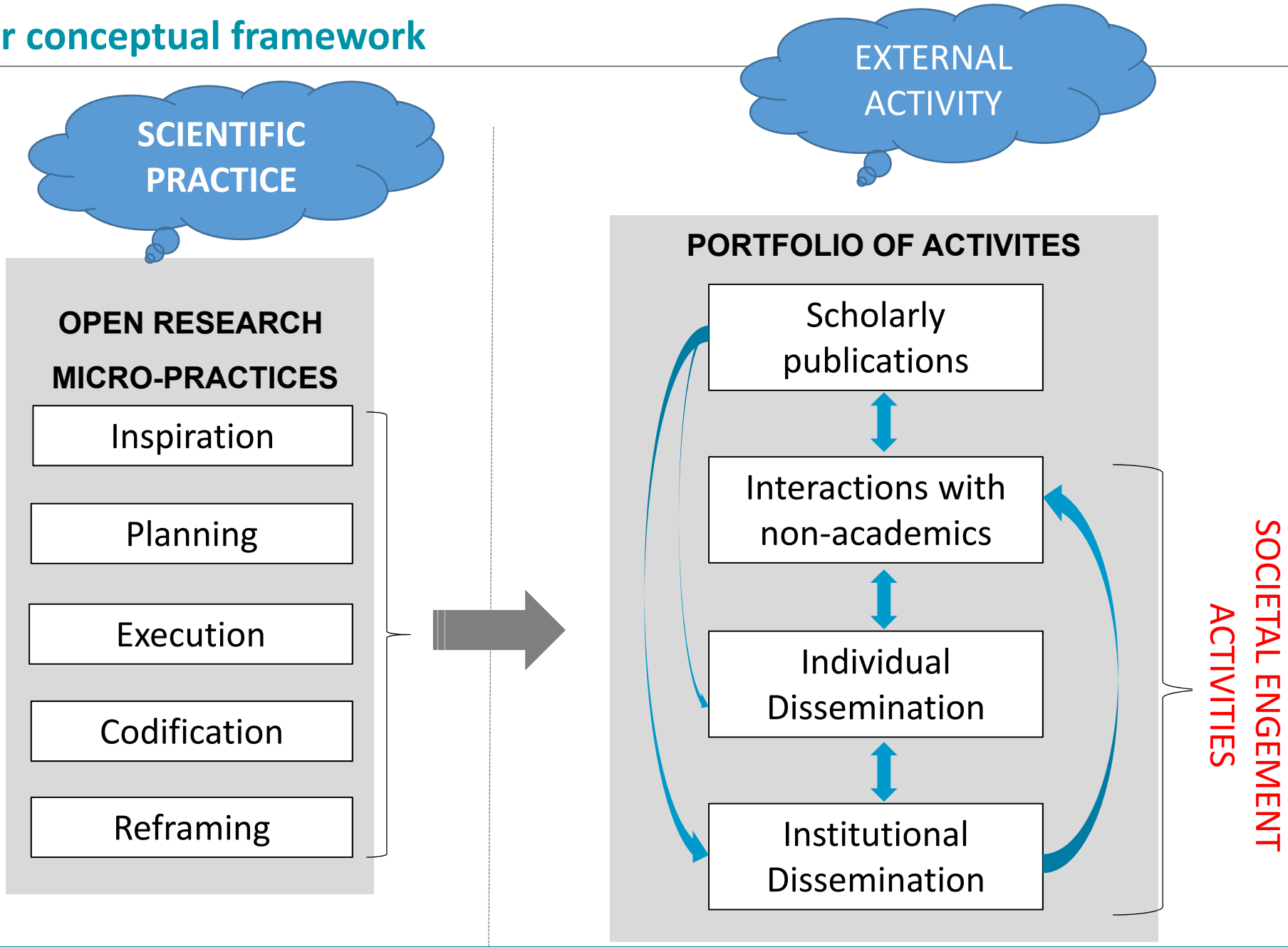
Planning : the researcher may design and produce a research project proposal including external issues, interests and needs as key research elements. (D’Este et al. 2017)

Execution : the researcher may undertake a research by actually using external knowledge, making a research project dependent on unique knowledge held by external partners (Kitcher, 2001).

Codification: the researcher may contribute to transform its results into practical relevant societal outcomes (Kitcher, 2001)

Reframing: one’s past research agenda is the starting point for future research; researchers whose past research has been affected by external influences starts from a knowledge base of contextualised knowledge (path impregnancy argument, Neff, 2014)

Our conceptual framework



Research objectives

Research questions:

a) How the different academic activities (*scientific and societal*) are *related*?

b) To what extent *researchers' openness* micro-practices are *related* to researchers' portfolio of *scholarly and societal activities?*

Our hypothesis:

Researchers conducting "open" research will produce knowledge that will be more *contextualized* (Nowotny et al., 2001) and more cognate with external users (Benneworth and Olmos, 2018), increasing its societal relevance and its easy of being uptaken by external users.

Thus, we expect that researchers conducting open research (leading to more pertinent/relevant knowledge) will be more likely to contribute to societal activities (interactions and dissemination).

Methodology

Data collection

- **Population:** 3,199 permanent researchers from the Spanish National Research Council (CSIC)
- **Source**: online questionnaire (IMPACTO project) in 2011 and WoS
- **Unit of analysis:** the researcher
- **Sample**: 1,295 researchers (40% response rate)

The IMPACTO project included a wide range of question exploring research characteristics and researchers' collaborations with external partners.

Method: multivariate path analysis

a) To explore how the different researchers' activities are related

b) To identify the salient open research micro-practices shaping researchers' portfolio of activities

Dependent variables

Dependent Variables	Description	Descriptive Statistics
Publications in scholarly journals	Number of articles published in scholarly JCR journals, with CSIC affiliation, in a 3 years' period.	Mean: 8.28 Range: 0-83
Interactions with non-academic entities	Index of frequency of collaboration in the last 3 years with: • Firms located in Spain • Firms located in other countries • Government agencies • International organisations • Non-for profit organisations	Mean: 1.95 Range: 1-4 α Cronbach: 0.69
Individual Dissemination	Index of frequency of participation in the last 3 years in: • Publications in textbooks and divulgation journals • Publications of articles in newspapers • Documentaries • Diffusion conferences or panel discussions • Radio or television programs	Mean: 1.74 Range: 1-4 α Cronbach: 0.70
Institutional Dissemination	Index of frequency of participation in the last 3 years in: • Courses or conferences in 1º or 2º schools • 'Science weeks' • Dissemination events like 'CSIC open door'	Mean: 1.66 Range: 1-4 α Cronbach: 0.75

Independent variables

	Measure	Sub-items	Mean (SD)
	RESEARCHERS' OPEN MICRO-PRACTICES		
Inspiration	Dichotomous variable coded '1' if researcher scientific activity was inspired or significantly inspired by practical use and/or application of knowledge outside academic environment, otherwise '0'		.71 (.45)
Planning	Continuous variable measured as an index on a 4-point likert scale (from 1=never to 4= regularly) to rate the frequency with which a researcher engages in each listed activity when developing a competitive research project. (α Cronbach = .794).	• Identify the potential results of your research that can benefit users • Identify the potential users who can apply the results of your research • Identify intermediaries in order to transfer the results of your results	2.52 (.72)
Execution	Continuous variable measured as an index on a 4-point likert scale (from 1=not important to 4= very important) to rate the degree of importance a researcher attaches to the listed sub-item as the reason for interacting with external entities (firms, public administration agencies, non-profit organisations). (α Cronbach = .696).	• To keep abreast of about the areas of interest of these non-academic entities • To test the feasibility and practical application of your research • To obtain information or materials necessary for the development of your current lines of research • To explore new lines of research	3.09 (.54)
Codification	Dichotomous variable coded '1' if researcher reported at least one of following three activities as important or very important external collaboration result: 1) obtaining patents or other intellectual property right; 2) developing exhibitions and/or exhibition catalogues; 3) generating clinical guidelines, standards, and codes of practices, '0' otherwise		.29 (.45)
Reframing	Dichotomous variable coded '1' if researcher experienced changes or substantial changes in past research agenda as result of relationships with external entities, otherwise '0'		.28 (.45)

(Olmos-Peñuela et al., 2015)

Control variables included

- Research Unit Size (nº personnel of the unit of research)
- Non-Competitive funds (%funds received from non-competitive funds)
- Gender (1= woman)
- Academic Position (3 categories) (3 binary variables) – 'Professor' is reference category
- Fields (8 fields) (8 binary variables) – 'SSH' is the reference category

Econometric results: relationships between the dependent variables

Correlations between disturbances	Scholarly Publications	Interactions with non-academic entities	Individual Dissemination
Interactions with non-academic entities	**NS**		
Individual Dissemination	**+ + +**	**+ + +**	
Institutional Dissemination	**++**	**+++**	**+++**

Data from IMPACTO Project
The number of characters corresponds to significance: 1 is 10%, 2 is 5%, 3 is 1%. NS=n significant
Signs correspond to the direction of the relationship between the dependent variables: '**+**' is positive direction; '**-**' is negative direction

- **Societally** engaged activities are **positively** related
- Activities related with **dissemination** (either academic or societal) are positively related
- **Scholarly publication and interactions** with non-academics are **independent**

Econometric results: influence of open research micro-practices

	Scholarly Publications	Interactions with non-academics	Individual dissemination	Institutional dissemination
Open micro-practices				
Inspiration			++	
Planning		+++	+++	+++
Execution	- -	+++		
Codification	- -	+	+++	++
Reframing	+++	+		

Data from IMPACTO Project

- Overall, **societally engaged activities are increased by openness**, while **scholarly publishing is reduced by openness** (but for reframing).
- Unexpected positive relationship between *reframing* and *scholarly publishing*: reframing as an activity where long-term research trajectories are determined→ researchers who are skilful in 'trend watching' without becoming bogged down in engagement during research execution and codification could be those that are able to achieve the highest levels of research productivity.

Emergent discussion

Academics with a **primarily scholarly publishing profile** are those with a **less open profile**
→Exclusively promoting scholarly outputs (and non-open practices) could lead to decreasing research overall societal relevance/usability.

If policy-makers are interesting in increasing societal value of academic knowledge, then incentives need to be created to stimulate research micro-practices that incorporate user influences *(ej. meaningful planning or undertaking research with users, co-generating research questions or codification), rather than encouraging just final activities.*

Spanish context - Reflection:

- Traditionally in Spain: *Publication Sexenio* (incentive for scientific productivity – publications).
- 2019: 1º year of the Knowledge Transfer *Sexenio* (incentives for knowledge transfer) as a serious attempt to incentivise diverse portfolios (beyond scholarly publications).
- It is surprising that policy-makers are introducing one reward (i.e., KT) to offset the distorting results of other interventions (i.e., publication *Sexenio*)
- Policy-makers who want to incentivise KT and useful outcomes would do better doing this in an integrated planned way, promoting openness, rather than repairing the damage done by other policies (e.g. incentives).

Thank you for your attention

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