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Sorting out Guidelines for a Good Evaluation of Research Practices. Towards the Assessment of Researcher's Virtues

Cinzia Daraio
Alessio Vaccari

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Sorting out Guidelines for a Good Evaluation of Research Practices. Towards the Assessment of Researcher's Virtues

Cinzia Daraio[1] and Alessio Vaccari[2]

[1] *daraio@diag.uniroma1.it*, [2]*alessio.vaccari@uniroma1.it*

Department of Computer, Control and Management Engineering "Antonio Ruberti" (DIAG), Sapienza University of Rome, Rome (Italy)

Abstract

In this paper, we propose the adoption of moral philosophy and in particular normative ethics, to clarify the concept of "good" evaluation of "research practices". Our perspective is based on the idea that research is a form of social practice according to MacIntyre (1985)'s conceptualization. From MacIntyre's notion, we elaborate three typologies of researcher: the *leader*, the *good* researcher and the *honest* researcher. Reflecting on what is a "good" research practice and on what is the role of researchers in it provides insight into some aspects of both the self-assessment process and how this promotes individual improvement. Moreover, this kind of reflection helps us to describe the functions (missions) of the research practices. A "good" evaluation should take into account all the building constituents of a "good" research practice and should be able to discriminate between good and bad research practices, while enforcing the functions of good research practices. These reflections may be the starting point for a *paradigm shift* in the evaluation of research practices which replaces an evaluation centred on *products* with an evaluation focused on the *functions* of these practices. In the last sections of the paper, we introduce and discuss an important aspect for the implementation of the proposed framework. This relates to the assessment of the virtues of researchers involved in a good research practice. Some examples of questions and preliminary items to include in a questionnaire for the assessment of Virtues in Research Practices are also provided.

Keywords: research assessment, good evaluation, research practice, virtue ethics, MacIntyre.

Introduction and main objectives

In this paper, we propose to use some of the notions employed by contemporary normative ethics to develop a framework for the "good" evaluation of research practices. We define *ethics* as the sphere of our reflection, language, emotions and behaviour that concerns "good" life, where "good" indicates what favours human flourishing in the various social practices in which human life is expressed. Following the extensive literature on the subject, we define *normative ethics* as that part of moral philosophy that formulates and justifies principles of conduct and concepts that are conceptually connected to the moral good. Basic ethical principles and concepts govern our self in two ways. They help us (i) to make the right sorts of decisions (*practicality requirement*), and (ii) to form a correct evaluation of other's behaviour (*evaluative requirement*).

Usually, normative ethics (see e.g. Furner, 2014) is not considered by evaluative bibliometrics and research evaluations. The consequence of this deficiency is that although there is a proliferation of increasingly sophisticated quantitative methods to evaluate research (see for example the case of university rankings), there is still a lack of clarity on how to understand and operationalize the notion of "good" evaluation of research practice. One of the reasons for this is the lack of a framework for the assessment of research and its impacts (Daraio, 2017). We believe, however, that the concept of "good" is a crucial standard against which to evaluate research practices enabling us to assess them in light of broad human interests.

The characterization of the notion of "good evaluation" of research practices requires the description of "good research practices". This is because a good evaluation takes into account the constitutive elements of a good research practice. Our proposal is to start from a

general notion of a "good social practice". From this notion, we specify the notion of "good research practice" and from the latter we specify that of "good evaluation" of research practice. This involves different moves that can be schematically indicated in three points.

- First, clarifying the notion of "social practice" explaining what it means to comply with its rules, and which elements of our *psychology* can account for its emergence. As it will become clear later on, to comply with social practices requires agents to develop specific traits of character which unable agents to grasp, produce and further the "internal goods" of the practices they join. These traits identify those who excel in following the practice. They are *exemplary* figures that the other participants in the practice want to emulate.
- Second, examining how the practice affects the life of those who inhabit it.
- Finally, setting the standards in the light of which assessing the overall effects of practices on society as a whole.

To undertake these tasks, we propose to use different resources offered by philosophical reflection on morals. In particular, we use tools borrowed from utilitarianism, virtue ethics and McIntyre (1985)'s characterization of social practice. Following this track, the paper aims to fill a significant methodological gap in the field of the evaluation of research. We argue that the evaluation of research activities, including research projects and programs, together with their outcomes, should not be limited to assess the products or quantitative aspects of the production and dissemination of recorded information, but should also take into account the *psychology* of the actors involved in this process (authors, readers, etc.), including their motivations.

Taking character qualities as essential inputs within the process of generating research outputs is not a completely new idea. Robert Merton (1973) famously illustrated the link between traits such courage, self-confidence, resilience, taste and the recognition from one's peers along with the capacity to produce excellent quality research. The way we use psychology, however, diverge in at least two ways from Merton's.

First, he uses individual qualities to explain and justify differences in capacity to acquire outstanding achievements between future Nobel laureates and average researchers. We instead use virtues to understand the difference between the activity of researchers, whose motivations cannot be described independently of the *intrinsic* (non-instrumental) desire to acquire the "internal goods" of the practice - e.g. the peculiar pleasure of undertaking new line of research, excellence in analytical skills, a particular taste for problem raising, etc. -, and those who participate in the research practice mainly out of desire to acquire goods *external* to the practice, e.g. power and wealth.

Second, unlike Merton, who merely mentions the excellences in character, we want to present a characterization of these virtuous psychological traits that highlights their constitutive role in producing a "good" research practice. We argue that a "good" practice is characterized, among other things, by the fact that its participants have an *intrinsic* (non-instrumental) interest in seeking the "internal goods" of the practice together with the capacity to grasp and appreciate them. In line with MacIntyre's approach we shall argue that the possibility of achieving these "goods" depends on whether participants in the practices have, cultivate and teach others certain virtuous character traits. In the following, we will provide a detailed description of what "internal" and "external" goods of the practice are.

The paper unfolds as follows. The next section introduces the main concepts of our framework. The following section describes at length the articulation of *internal* "goods" and *external* "goods" of a research practice. The virtues a researcher involved in a good research practice must have are then analysed in the following section. After that, we highlight the relevance of the proposed framework discussing its usefulness in self-assessment and for a paradigm shift in the evaluation of research. The following section discusses the measurement of research virtues and the final section proposes some examples of questions and preliminary items of a questionnaire for the assessment of virtues in research practices.

Our conceptual framework

Our perspective is based on a highly plausible hypothesis: the idea that a good scientific/academic research is a form of social practice *a la* MacIntyre. Following MacIntyre's formulation of a social practice (MacIntyre 1981 first ed.; 1985: 187; Vaccari 2012) we define a *good practice* as "any coherent and complex form of socially established cooperative human activity through which goods internal to that form of activity are realized in the course of trying to achieve those standards of excellence which are appropriate to, and partially definitive of, that form of activity, with the result that human powers to achieve excellence, and human conceptions of the ends and goods involved, are systematically extended" (MacIntyre, 1981 first ed.; 1985: 187).

That scientific/academic research can be described according to the McIntyre model is strongly justified by the well-known definition of research practices offered in the Frascati Manual. According to this document (OECD, 2015, p. 44) Research and experimental development (R&D) "comprises creative and systematic work undertaken in order to increase the stock of knowledge - including knowledge of humankind, culture and society- and to devise new applications of available knowledge". For an activity to be an R&D activity, it must satisfy five core criteria. The activity must be: 1. Novel, 2. Creative, 3. Uncertain, 4. Systematic, 5. Transferable and/or reproducible.

On the basis of this definition, we characterize a *good research practice* as any coherent and complex form of socially established cooperative human activity through which its participants, through the exercise of a set of refined human psychological qualities or virtues (called "human powers" or virtues by MacIntyre), contribute to the advancement of the body of knowledge that is constitutive of that practice. The term "good" is used to identify a refined and reason-mediated use of typically human abilities (e.g. empathy, imagination, courage, self-reliance, the ability to bind oneself to rules perceived as authoritative, etc.) that yields a meaningful and fulfilling life.

From MacIntyre's notion of research practice we elaborate three typology of researchers: the *leader*, the *good researcher* and the *honest researcher*.

The *good researcher* is a typical participant of a good research practice defined so far – she/he participates in the practice learning and developing the virtues of the practice. The *good* researcher employs typically human qualities to respond in the best way she/he can to the problems that are typical of that practice enabling her/him to creatively advance a particular stock of knowledge. From the good researcher we distinguish the *leader researcher* and the *honest* researcher. The *leader researcher* is one who achieves an outstanding level in the development of creative and social virtues enabling her/him to produce excellent outputs and to be a motivating leader in research group. Finally, the *honest researcher* is the one who does not produce outputs that are contrary to good research practices. More precisely, the honest researcher typically exemplifies the researcher who has completed her/his PhD and is at the beginning of her carrier. Within research institutions, this figure mainly carries out her/his activity in the service of more experienced researchers. Within the university, she/he carries out her teaching activity mainly as a tutor not having yet her/his institutional course during one of the terms. The figure of the honest researcher generally progresses towards that of a good researcher and, in some cases, becomes a leader. However, this may not be the case. In such a situation, an honest researcher is one who, despite having a permanent job as a lecturer or researcher for many years, continues to carry out the tasks she/he was carrying out at the beginning of her career. She/he, however, grasps the research practice in which is involved, with its "internal goods", and fulfils his/her role of being at the service of the practice.

A *good evaluation* of research practices is then an evaluation that is able to take into account the different elements that characterize a good practice, that is, both its outcomes (which can be classified in *internal* and *external goods*, following MacIntyre) as well as the virtues of these three types of researchers.

We characterize *internal goods* as both the outcomes of research and the subjective experiences related to participation in the practice of research, which does not necessarily translate into outputs. We call *external goods* the positive and measurable effects of research results or outcomes on society as a whole.

We argue that good evaluation must therefore be able to distinguish good practice from bad practice. The first is that in which researchers participate in the practice because they are motivated by both internal and external goods. A bad practice, on the other hand, is one in which participants are in no way motivated by the intrinsic desire to achieve internal goods but only act out of the desire of goods external to the practice.

To carry out a good evaluation it is not sufficient to follow abstract and impartial rules, but it is also necessary to have developed *certain virtues* that enable the evaluator both to apply those rules when they conflict with their partial interests and to interpret them in such a way as to make them applicable to the specific case.
We propose to identify the most significant virtues of the *good* evaluator with justice, empathy and practical wisdom. We will analyse them in details in the following.

Internal "goods" and *external* "goods" of a research practice *à la* MacIntyre and Nussbaum's theory of abilities

Let us now examine in detail the nature of external and internal goods as well as how this distinction affects the plurality of standards that constitute good evaluation practice.

Since its products are both internal and external to scientific practice, having an impact outside the research community that potentially affects the well-being of society as a whole, it is advisable to use different styles of evaluation to assess each of them. Therefore, in addition to MacIntyre's concepts of virtue ethics, our framework will also use notions from Nussbaum (2006)'s theory of abilities, and from utilitarianism (as discussed in the next section).

We believe that nowadays research practices require hybrid forms of combination between internal and external goods. Different factors can explain this transformation, including the changes in the way in which science is produced and interacts with society (Scott, 2003).

The model of the virtues can be useful to identify those dispositions that unable researchers to grasp and respond to, in a good enough way (Swanton 2003:1), the internal and external goods of the research practice. As we will show in a moment, these goods include objects, and ways of socially interact with persons and educate them.

To better characterize the notion of social practice that we are using to describe scientific research, it is useful to articulate further the distinction put forward by MacIntyre between "internal" and "external goods".

"Internal goods" to a practice are high quality *outcomes* of the practice that (a) can only be specified in terms of some specific practice, as for example the way of conducting an

empirical experiment; the practice of university teaching through lessons, seminars, individual tutoring activities; the practice of interpretation and problematization of the text of classical authors in the humanities; etc. and (b) can only be identified and recognized by the experience of participating in the practice in question. Those who lack the relevant experience are incompetent thereby as judges of internal goods (MacIntyre 1985: 189). Internal goods are reachable by those participants in the practice who practice it as an end in itself and not merely as a means to get something else, e.g. money, power, prestige. According to MacIntyre, these goods include three kinds of *outcomes*. They are

- *the high quality in performance* (e.g. ability to question a text; ability to ask relevant questions during an experiment; ability to motivate one's own research group or students in class, etc.);

- *the high quality of the outcome itself* (e.g. articles, books, research projects, discoveries, etc.);

- *the great value that comes from living a certain kind of life* – the fact that occupying a certain professional role in a research practice contributes to the unity and value of the researcher's life.

The last point needs more articulation. The idea is that those who participate in a practice by acquiring its internal goods are likely to consider it as *something that makes their lives meaningful*. They will tend to describe their lives as those of the participants in a certain practice and this will give a unitary character to the different parts of their biography.

Unlike internal goods, external ones are only "externally and contingently attached" to the practice by the accidents of social circumstance and typically includes prestige, status and money. There are always alternative ways for achieving such goods, and their achievement is never to be had "only" by engaging in some particular kind of practice (MacIntyre, 1985: 201). Moreover, external goods, when achieved, they are always some individual's property – i.e. the more someone has of them, the less there is for other people. They are characteristically objects of competition in which there must be losers as well as winners. On the contrary, internal goods include the outcome of competition to excel, but also positive externalities. This means that their achievement is a good for the whole community who participate in the practice (e.g. Bowlby's attachment theory has transformed the way of seeing the relationship between mother and child by reducing trauma in hospitalized young children; Moore's naturalistic fallacy argument has helped expose many fallacious arguments in philosophical reflection).

The evaluation of the particular practice covered by this paper requires that both internal and external goods are taken into account. On the one hand, it is necessary to assess whether the practice of the academic/scientific research under examination is actually a good practice. In doing so, account must be taken of the excellence of its outputs, the way in which they are achieved (in accordance with the rules that constitute the practice), and the impact that following the practice has on researchers' life plans. On the other hand, we need to establish what consequences following the practice has on the values protected by the democratic constitutions in which the practices have taken hold. That is, we must assess whether the practices produce outputs that are in conflict with interests such as freedom, equality, health, respect for the environment, human dignity, and sociability.

Our framework helps us to justify why in the widely used Quadrant Model of Pasteur (Stokes, 1997) the "use-inspired basic research" or "Pasteur's Quadrant" exemplify the best

practice, in which both dimensions (questions for fundamental understanding and considerations of use) are combined in a mutually supportive way.

In the light of this twofold requirement, we believe it may be helpful to interpret the two types of goods in the light of the capability approach developed by Nussbaum (Nussbaum, 2006). Specifically we holds the view that internal goods of the research practice are:

1. Use the senses, imagination and rationality in a typically human way, informed by adequate education. Be able to use imagination and thought in connection with our experience and produce works that are the result of our autonomous and reflective choices (reinterpretation of Nussbaum's point 4: 95)

2. To be able to pursue the objectives of research without ulterior purposes but as intrinsic ends. Be able to have fun and play with activities related to the practice. Moreover, be able to acquire and use specific mental capacities connected with the exercise of the practice such as the ability to apply the rules of the practice to completely new and unexpected contexts, ability to grasp the saliences of the situation required to act in accordance to the practice, etc. (reinterpretation of Nussbaum's point 9: 95).

3. To be able to have attachments to people involved in the practice and to the outcome of research; to experience gratitude towards teachers and masters and justified anger towards those who betray our trust and violate our intellectual property. Be placed in conditions where one's potential and development is not hindered by fear and anxiety (reinterpretation of Nussbaum's point 5: 95).

Following the same approach, we argue that external goods are not only money, power or the reputation of the research institution and its capacity to attract investment, but also the impact research practice has on what Nussbaum has called the "human capacities necessary to live life worthy of human dignity". These capacities, should include:

1. *Life, Bodily Health.* Being able to live to the end of a human life of normal length – i.e. not dying prematurely, or before one's life is so reduced as to be not worth living – and being able to have good health, including reproductive health; to be adequately nourished (Nussbaum's point 1 and 2);

2. *Affiliation.* Being able to live with and toward others, to recognize and show concern for other human beings, to engage in various forms of social interaction; to be able to imagine the situation of another. Protecting this capability means protecting institutions that constitute and nourish such forms of affiliation, and also protecting the freedom of assembly and political speech. Having the social bases of self-respect and non humiliation; being able to be treated as a dignified being whose worth is equal to that of others. This entails provisions of non discrimination on the basis of race, sex, sexual orientation, ethnicity, caste, religion, national origin (Nussbaum's point 7: 96)

3. *Other Species.* Being able to live with concern for and in relation to animals, plants, and the world of nature (Nussbaum's point 8: 96)

4. *Control over One's Environment.* (a) *Political*. Being able to participate effectively in political choices that govern one's life; having the right of political participation, protections of free speech and association. (b) *Material.* Being able to hold property (both land and movable goods), and having property rights on an equal basis with others; having the right to seek

employment on an equal basis with others; having the freedom from unwarranted search and seizure. In work, being able to work as a human being, exercising practical reason and entering into meaningful relationships of mutual recognition with other workers (Nussbaum's point 10: 96)

In order to take account of these goods, the evaluation of research practice must also be able to assess the ability of researchers to obtain them. To this end, the virtues of the participants in the practice should also be taken into account. Following once again the MacIntyre setting, we define virtue as "an acquired human quality the possession and exercise of which tends to enable us to achieve those goods which are internal to practices and the lack of which effectively prevents us from achieving any such goods (Macintyre, 1987: 191)".

A potential issue arising from taking this approach concerns the relationship between moral virtues and the virtues that are relative to those who practice scientific research. This is one aspect of the more general issue which concerns the possible tension between the traits of character that make us good as human beings and those that make us efficient as occupying a particular social role. For example, it may be argued that the ability to take a certain detachment from suffering may be a necessary trait in a physician who allows him to make crucial decisions by looking only at facts objectively without letting himself be clouded by emotions. This same trait, however, is not desirable within family relationships where the ability to participate in the emotional life of loved ones is a fundamental part of relational life. Likewise, although a professor's loyalty to his pupils can have the useful function of creating a close-knit group that works efficiently and does the good of research. This same trait could lead the teacher to misbehaviour when, in assigning a public job, he prefers one of his students to another clearly more competent one. These are, of course, simplifications, and one could argue that the more detailed the example becomes, the more so-called conflicts are mitigated. Mitigated as it may be, however, it could be argued that some dose of conflict between the virtues of participants in social practices and moral virtues exists. And if this is true, what is the point of arguing that philosophical ethics can help us define the virtues of the academic researcher?

Our thesis is that moral virtues can be interpreted in ways that allow a typically non-conflictual relationship with the role-specific virtues. According to our proposal, which follows the general lines of Swanton (2007)'s analysis, the relationship between virtues and role-specific ones runs in two directions. On the one hand, role-specific virtues allow moral virtues to be given content, which otherwise would be too vague and generic to offer a practical guide to action and to assessing the conduct of others. This is to say for example that the virtue of courage acquires its content only when it is grounded on the paradigmatic cases of courage that human beings find themselves living in their concrete social interactions as parents, friends, members of a community, etc. On the other hand, what virtue requires in different social circumstances is delimited by the general meaning of virtue. To return to the example of courage, what is required of a brave friend is partly defined and circumscribed by the fact that courage should not be confused with recklessness and disregard for danger.

Our proposal will make use of the following concepts. Following the analysis of Churchland (1998) and Swanton (2007) we define moral virtues as prototype virtues. These have a "high degree of generality, in which contexts such as the role of the agent, his relationship with others, social conventions, and the particular narratives of his/her life have been abstracted away" (Swanton 2007, p. 211).

The transition between the prototypes or moral virtues and the corresponding role specific virtue involves two stages:

1. The *thin* account gives the specification of the field of a virtue (its domain of concern) and states that the virtue is being well disposed in relation to that field. For example, *loyalty* is

being well disposed with respect to 'sticking to' relevant individuals or institutions. *Trust* is being well disposed with respect to believing, supporting, and so forth relevant individuals.

2. The *thick* account is given by so-called 'mother's knees rules and basic accounts of relevant emotional and motivational dispositions (Hursthouse, 1999). These rules are characteristically unsophisticated and vague. These provides saliences and paths to assist the development of appropriate emotional and cognitive paths on the world. These different rules articulate the content of the prototype virtues so as to differentiate it according to the different social roles that the subject finds himself occupying.

The claim that prototype virtues are vague is central to the idea that *roles demands* do not characteristically conflict with those of being good as a human being. For example, insofar as honesty is a prototype virtue, it does mean something like *telling the truth* and not lying here and now. On the other hand, in the role-specific virtue of honesty for academics, the substantive question is *what counts as excellence* in the field of quoting, divulgating and disseminating information. *Only when more specific requirements are determined by role-differentiation do we know what it would be to act honestly as a human being.* However, given that honesty is a prototype virtue, an agent with that virtue will have emotional and cognitive dispositions which make his/her not ready to lie or distort the truth.

Given that prototype virtue are vague and need to be specified by role-differentiation, *how do they provide constraints to role virtue*? Our idea is that they provide anchors for moral reflections in role contexts, alerting us to possibilities of excess. Such anchors are traits of characters whose emotional and cognitive features are deeply rooted though early training.

Indeed, those treats of character can be introduced through the narrative of exemplar stories of leaders, may be included in training for young professors and so on.

Why we introduced this distinction? Because it may be useful to understand misconduct in the scientific practice.

In the conclusion of a recent report on Fostering Integrity in Research (2017, p.208-209) by the US National Academies, it is stated: "The committee reaffirms the central recommendation from Responsible Science [a previous report of 2002] that formally places the primary responsibility for acting to define and strengthen basic principles and practices for the responsible conduct of research on individual scientists and research institutions. At the same time, the committee based its recommendations on its understanding that the integrity of research depends on creating and maintaining a system and environment of research in which institutional arrangements, practices, policies, and incentive structures support responsible conduct. Fostering research integrity is an obligation shared not only by individual researchers but also by leaders and those involved with all organizations sponsoring, conducting, or disseminating research, including corporate and government research organizations." Hence, the primary responsibility is on individual scientists. Fraud and misconduct have for several years been identified as a relevant problem of the scientific community. For a review, see Fanelli (2009). More recently, Fang et al. (2012) found that the main reason for retractions relies on misconduct.

Our conceptual framework allows us to distinguish (discriminate) good research practices from bad research practices.

The virtues of a researcher involved in a good research practice

Without claiming to be exhaustive, we propose some virtues that are typically expressed in the practice of research. By this we do not mean that neither the components of a practice, considered as a whole, should possess all of them, nor that each participant should.

The list we propose is the result of an elaboration of different sources, both McIntyre himself and more specific literature, for example business ethics and scientific research. Virtues are not presented in a lexical order. However, we can expect an empirical survey to reveal that some virtues are possessed with greater intensity by some types of researchers (e.g. leaders) and not by others.

a *Justice*: is the disposition, required above all by the evaluators of the performances and outputs of others, to treat others "in respect of merit and of the desert according to uniform and impersonal standard" (MacIntyre, cit., 191-192). The virtue of justice also requires us to apply this same standard to ourselves in relation to others, i.e. not to favour ourselves over people more meritorious than ourselves.

b *Courage*: is the capacity to risk damage or danger to oneself when individuals, values, goals that are crucial to the existence of the practice are at stake. Courage is therefore a way of showing that our attachment to these elements of the practice is genuine (McIntyre, cit., 192).

c *Resilience*: together with pride, this ability is indispensable to move forward in the search. It allows us to leave behind failures (paper rejected, unfunded projects, etc.) and to focus on future projects (Hormann, 2018).

d *Empathy, Benevolence*: In line with extensive literature, by this term we mean the human ability to feel the emotions and feelings of other people through a vicarious feeling that is similar to that of the person with whom we sympathize. We do not believe, however, that empathy in itself is a virtuous capacity in research practices. Since empathy is an instrument for reading the other's mind, it can also be used to manipulate others researchers in malicious ways. Empathy must be cultivated in such a way that it is rooted in the benevolent tendencies of human beings (Batson 2017: 2). In this way, empathy can allow the creation of a climate of *trust* between those who work within research institutions. Mutual trust is in fact an indispensable component in these practices given the fundamental fact of the asymmetry of power that characterizes those interactions (Baier, 1991).

e *Pride*: it is evaluative attitudes towards ourselves (Ardal 1966; Cohon 2008; Taylor 2015). Unlike other emotions, which simply motivate us to pursue or avoid objects, this traits of character fix our attention on persons, casting a positive or negative light on them. If I am proud of my child's success at school, my pride does not fix my attention on the 'merits of my child,' and still less on 'me in the role of father,' but on the whole of myself. As Cohon has rightly said, "when I feel pride, I am proud of something in particular [its cause] . . . But the attitude of pride is a pleasure or satisfaction not in that particular accomplishment or possession, but in myself in my entirety" (Cohon 2008: 166). We believe that the pride associated with one's own achievements in research and the consequent approval of one's peers or superiors is a fundamental spring that drives researchers to perform at best in their area of research (Tangney, 1999).

f *Prudence*: is the capacity to sacrifice the satisfaction of less important pleasures closer in time than the satisfaction of more distant but more important pleasures. Where the degree of

importance is defined with respect to the long-term objectives that characterize our lives (Parfit 1984).

g *Humility*: the ability to accept the authority of the standards related to the rules that define the practice. I have to recognize that other participants know rules and know how to apply them better than I do. I have to be willing to learn from these people and accept their criticism (MacIntyre 1985: 193).

h *Patience:* the ability to curb one's own urge to complete a research in order to obtain as soon as possible the gratification of a positive result. To be able to wait and to be guided by a cautious scepticism that prompts us to control accurately the different steps of our investigation.

i *Accuracy*: the disposition that consists in the care with which the individual researchers collect data that will constitute the pool of information shared in the research practice (Williams 2002).

l *Sincerity, Honesty*: the disposition to tell the truth to others and, when this does not happen, it is the capacity to indicate good reasons why this did not happen where good refers to the fact that these reasons have a constitutive reference to the interests of other people (McIntyre 1985; Williams 2002).

m *Integrity*: the willingness to behave in such a way that our actions are the outcome of our deepest values and commitments and that we tend to refuse making them hostages to imposed obligations or duties that we do not endorse on reflection.

n *Creativity*: the ability, which finds expression both in our social interactions with others and in the products of our research, to produce something that not only has value but is characterized by the elements of novelty and the capacity to arouse surprise in others. (Swanton 2003: 162, 165).

o *Practical wisdom*: it is a kind of super-virtue essential to make each virtue effective. It enables the virtuous agent to acknowledge and respond properly to the items in the field of the research practice, choosing the appropriate means for their own ends. (McDowell 1979). Moreover, it also allows the different virtues within an individual's character to operate and develop harmoniously with each other.

We argue that these virtues are those traits that permit to acquire the internal goods of research practices. We also argue that the link between virtue and internal goods is not instrumental but conceptual: internal goods are not understandable or achievable except through the exercise of the virtues mentioned above. The situation is different for external goods. Even if the possession and exercise of the virtues by researchers can allow them or the institution in which they work to obtain them, this also depends to a considerable extent on other factors. In particular, by the institution's relations with other companies and organisations and by its ability to communicate and sell its results externally (Scott 2003).

Relevance of the proposed framework: self-assessment and paradigm shift in the evaluation of research

The conceptual framework developed in this paper allows us to identify (define) the *good* evaluation as the evaluation that is able to discriminate between good and bad research practices. Having characterized the research practice through "internal" and "external" goods, offers us the possibility to deepen our understanding about what is a good research practice and what is the role played by researchers in it. Reflecting on what is a "good" research practice, on what is the role of researchers in it, according to the typologies of researchers we propose (leader, good and honest researcher), may be extremely useful for many reasons.
Firstly, it offers a *self-assessment tool* for researchers, to understand the functions of their research activities, their motivations and where they are in their research practice. This is an important step towards the *improvement* of research practices and individuals involved in it.
Secondly, it helps institutions to collect and *describe* the main functions of the research practices (highlighting their special features) developed by its researchers, and their motivations, to include them in their *strategic plan*. This is a further important step for the *development* and *improvement* of the organizations involved.
A "good" evaluation should take into account all the building constituents of a "good" research practice and should be able to discriminate between good and bad research practices, while *enforcing* the functions of good research practices.
These reflections, although at their infant stage, may be the starting point for a *paradigm shift* in the evaluation of research practices. From an evaluation focused on *products* towards an evaluation focused on the *functions* of research practices. This new way of evaluate might also contribute to improvement of the research practices itself, stimulating new innovative solutions thanks to the self-assessment of the research community, providing clearer views of the strategy, missions and functions of the groups involved in the research practices.

Towards the assessment of researcher's virtues

One of the central theses of this essay is that virtue can be transmitted within research practices from the most experienced components or leaders to the new generations of researchers. This transmission is a crucial fact. As we have repeatedly argued, the peculiar notions of social practice and internal goods used in our evaluative model imply that it is not possible to acquire the virtues that realize those goods if not within the practices in which these goods emerge.
At a general level, this is a plausible thesis, which does not give rise to any particular objections. It could be argued, however, that a virtue-oriented evaluation model should engage in a stronger thesis and it is precisely at this point that difficulties may arise. What should be indicated are the criteria that allow us to quantify this transmission, allowing us to distinguish the situations in which it occurs effectively from those in which the transmission is defective. In order to make this distinction effectively, it would be necessary to measure the possession of virtue in young researchers, thus making it possible to obtain indirect indications as to which circumstances are most favourable to their transmission within the practices. It is precisely this additional requirement that seems to raise objections. Virtue, it has been argued, seems to consist of a special sensitivity that escapes empirical measurement (Murdoch, 1998).

Recently, however, some scholars have tried to undermine this pessimist assumption by giving hope to those of us who seek to develop a model of evaluation of research including also a component based on the virtues. It has been argued that although in some cases pessimism may be plausible, in others it is not. It is likely in exceptional cases, i.e. far above or far below the

average threshold. But in cases involving the behaviour of most of us, pessimism is not plausible: in cases falling within the average, it is conceivable to give an account of the psychological states that underlie our virtues, and it is also possible to do so in ways that do not escape empirical investigation.
For example, Nancy Snow recently claimed that extraordinarily virtuous people can be compared to individuals who have a special artistic talent. In both cases, their abilities are clearly not attributable to specific elements of their psychology. Likewise, when we are dealing with people who while not having received an adequate moral education or, worse, have been morally corrupt, strive to behave affectionately with others, it is difficult to say whether they simply act out of a sense of duty or have acquired a minimum interest in others (Snow, 2014, p. 3). Consistently, our framework and the typology of researchers we propose does not include "Genius" as we consider them as the limit of the spectrum of possible researchers that is difficult to assess (Kaufman, 2013). In other words, genius should be detected and treated differently. What we consider as leader, identifies instead a clear set of dispositions of the character that is possible to teach and learn and hence, at a given extent, can be measured. On the contrary, it is not possible to teach and learn how to be a "Genius".

Snow has recently launched a promising line of research based on the *elements of psychology* that characterize the virtues. In its perspective virtue is composed of the following three elements: 1) *intelligent virtue*, which highlights the fact that virtue proceeds from a set of cognitive and emotional mental states that enable us to be sensitive to some morally relevant features of the situations in which, really or imaginatively, we find ourselves (Snow, 2014, pp. 4-5. See also Snow, 2010 and 2012); 2) d*ispositionality*, refers to the fact that this state is a trait of the personality of the agent and is not only an occasional element of his psychology; 3) *behaviour*, i.e. virtue typically manifests itself in the actions and other behavioural responses of the virtuous person (Snow, 2010, pp. 4-5).

Snow argues that each of these characteristics of virtue *can be measured* and and she outlines a model that consists of three measurement criteria. First, the agent's performance must be taken into account, i.e. the presence of the virtue in question must be verified from the agent's ability to repeatedly perform a given behavioural pattern in the different situations that constitute, so to speak, the field of action of a specific virtue. Secondly, Snow believes it is crucial to take into account the reports that agents make of their emotional and cognitive life during the performance of actions that they consider virtuous. To facilitate this task, Snow believes it is desirable that, on the model of some US colleges, research institutions make available to their participants special apps that can be downloaded on any electronic device, allowing them to collect the results of the *self-observations* of agents. Gathering the products of introspection, in addition to offering a useful material to those who are called to assess the presence of virtues in others, also allow agents to take into account the health of their virtues and measure any flexing or, on the contrary, increases in their readiness and effectiveness in responding to the pressures the world exerts on them. Finally, Snow argues that it is important to connect these data with those that impartial observers, in the figure of external evaluators, can collect in the course of *annual surveys* covering both the outputs of the research and the way in which the researcher dwells in different spheres of social interaction with other participants in the practice.

A further problem to be addressed is which questions to introduce in the questionnaires. These must be sufficiently diversified to allow the evaluators to answer not only the dry question about whether or not there is a virtue, but also to determine the *quantum* of it. Snow suggested four levels to be introduced in the questionnaires. The first verifies the presence in the agent of receptivity to the stimulus that typically activates virtue. The second examines its

ability to recognize the virtue appropriate to the given circumstance. The third verifies the most complex ability to generate a virtuous response. The fourth, finally, measures the ability of the agent to generate the virtuous response in a cross-cutting way to a plurality of situations.
Following the four levels questions introduced by Snow, it is possible to measure on a scale from 0 (minimum) to 4 (maximum) the researcher's mastery of virtue (over a spectrum ranging from (1) the ability to understand the importance of the problem to which virtue constitutes an answer, to (2) the ability to recognize the virtue in question, to (3) the ability to express virtue occasionally, to (4) the ability to manifest it in all situations that constitute the scope of that virtue).
On the basis of our characterization of the different types of researchers, it can also be expected that some virtues will be typical of one group and not of another. Leaders, for example, will tend to show pride. While humility will be typical of honest researchers.

Towards a Preliminary Questionnaire for an Evaluation of Virtues in Research Practice

In this section, we attempt to develop a quantitative assessment of the virtues that a researcher involved in a "good" research practice should have. In addition to the works cited in the previous section, several strands of literature have treated these topics from different points of view.
Resnik (1998, pp. 48-61) proposes 12 principles of ethics in science which relate to the research process. The most important ones, related to the virtues cited in the Section "The virtues of a researcher involved in a good research practice" are included in our Table 1 below.
Sagiv et al. (2017) report a comprehensive review of the numerous existing studies on personal values, integrating different streams of research in psychology, sociology, management and political science. They define values as "what is good and worthy" and individual or personal values as "broad desirable goals that motivate people's action and serve as guiding principles in their lives". In their study, Sagiv et al. (2017) state: "*Individuals act in ways that allow them to express their important values and attain the goals underlying them.* Thus, understanding personal values means understanding human behaviour (Sagiv et al. 2017). In contrast to the numerous studies investigating the consequences of values, much less is known about the origin of values." By summarizing existing literature from different streams of works, Sagiv et al (2017) conclude that "understanding personal values means understanding human behaviour" and identify 10 basic human values. We attributed this list of values to the list of virtues we proposed in the Section "The virtues of a researcher involved in a good research practice" (see Table 1).
Åkerlind (2008) on the base of a literature review and following a series of interviews conducted for his study, shows that there are 4 qualitatively different ways of understanding being a university researchers, ranging from fulfilling academic requirements, establishing oneself in the field, developing oneself personally and enabling broader change. Åkerlind (2008) found also a dimension of the research experience that was not present in previous studies which relates to different *range of feelings* associated with each way of understanding being a researcher. She found a graduation of feelings, ranging from "Anxiety to satisfaction" for those that consider research as "fulfilling academic requirements", from "Frustration to joy" for those considering research as "establishing oneself in the field", feelings of "interest and enthusiasm" for those that are doing research for "developing oneself personally", up to "passionate engagement" for those that are doing research for "enabling change". Taking into account these different feelings, she concludes, may be helpful to understand differences in the behaviour of researchers belonging to the same field or similar field of study.

Developing further the previous consideration, Bazeley (2010) proposes a conceptual model of research performance including six main components that are engagement, task orientation, research practice, intellectual process, dissemination and collegial engagement. These items are included in our list of items to consider for developing a Questionnaire for a quantitative assessment of virtues (see Table 1).

The managerial literature on virtue ethics in business has received a recent development. See Ferrero and Sison (2012) for a review. In particular, Walumbwa et al. (2008) put forward a quantification of leadership comprising self-awareness, relational transparency internalized moral perspective and balanced processing. We integrate this perspective in our list of virtues proposed in the Section ("The virtues of a researcher involved in a good research practice") to show that our framework is flexible enough to embrace different streams of literature. See Table 1 in which the dimensions proposed by Walumbwa et al. (2008) are integrated in our framework.

Table1. Towards a Preliminary Questionnaire for an Evaluation of Virtues in Research Practices

Virtue	**Examples of questions and items to develop in the Questionnaire**
a ***Justice***:	- *Self-transcendence* from Sagiv et al. (2017): *Universalism* Understanding, appreciation, tolerance and protection for the welfare of all people and of nature (equality, unity with nature, wisdom, world of peace, world of beauty, social justice, broadminded, protecting the environment).
	- Solicits views that challenge his or her deeply held positions (*Balanced Processing* in Walumbwa et al (2008)).
	- Listens carefully to different points of view before coming to conclusions (*Balanced Processing* in Walumbwa et al (2008)).
b ***Courage***:	
	- Willingness to risk damage or danger to oneself when individuals, values, goals that are crucial to the practice are at stake.
	- Freedom (*aspects of the research process* in Resnik, 1998). Scientists should be free to conduct research on any problem or hypothesis. They should be allowed to pursue new ideas and criticize old ones.
c ***Resilience***:	
	- Regularly resubmit papers after rejection in prestigious and very selective journals.
	- Apply for highly competitive grants.
d ***Empathy, Benevolence***:	
	- *Self-awareness* in Walumbwa et al. (2008): seeks feedback to improve interactions with others; accurately describes how others view his or her capabilities.
	- *Self-transcendence* from Sagiv et al. (2017): *Benevolence* Preservation and enhancement of the welfare of people with whom one is in frequent personal contact (loyal, responsible, honest, helpful, forgiving).
	- *Collegial engagement* from Bazeley (2010): explains to others; shares ideas-helpful; research leader; has students
e ***Pride***:	
	- *Self-Enhancement* from Sagiv et al. (2017): *Achievement* Personal success through demonstrating competence according to social standards (ambitious, capable, influential, successful); *Power* Social status and prestige, control or dominance over people and resources (social power, wealth, authority).
	- From Sagiv et al. (2017): *Hedonism* Pleasure and sensuous gratification for oneself (pleasure, enjoying life, self-indulgent).
	- *Engagement* from Bazeley (2010): hands on; intrinsic interest; enthusiasm; breadth; volume; neglect other duties.
	- *Dissemination* from Bazeley (2010): publishes; presents; communicates well; uses networks; self-promoting.
f ***Prudence***:	
	- *Conservation* from Sagiv et al. (2017): *Security* Safety, harmony and stability of society, relationships, and self (social order, national security, family security, reciprocation of favors, clean); *Conformity* The restraint of actions, inclinations, and

	impulses that are likely to upset or harm others and violate social expectations or norms (politeness, self-discipline, respect for elders, obedient); *Tradition* Respect, commitment and acceptance of the customs and ideas that traditional culture or religion provides (respect for tradition, modest, humble, accepting my portion in life, devout)
g ***Humility***:	
	- To recognize that other researchers (participants to the practice) know rules and know how to apply them better than I do.
	- To be willing to learn from these people and accept their criticism.
h ***Patience***:	
	- being able to curb the rush to hastily complete a search to achieve the gratification that comes with a *prima facie* positive result.
	- Willingness to be guided by a cautious scepticism that prompts us to control accurately the different steps of our investigation.
i ***Accuracy***:	
	- Carefully collects the information that constitutes the pool of information on which the practice revolves;
	- Carefulness (*aspects of the research process* in Resnik, 1998) Scientists should avoid errors in research, especially in presenting results. They should minimize experimental, methodological, and human errors and avoid self-deception, bias, and conflicts of interest.
	- Openness (*aspects of the research process* in Resnik, 1998) Scientists should share data, results, methods, ideas, techniques, and tools. They should allow other scientists to review their work and be open to criticism and new ideas.
	- *Task orientation* from Bazeley (2010): organised-disciplined; careful-thorough; finisher; commitment-persistence; problem solver; confident.
	- *Research practice* from Bazeley (2010): methodologically sound; technical skill; substantive knowledge; strategic.
l ***Sincerity***, ***Honesty***:	
	- To say exactly what we mean (*Relational Transparency* in Walumbwa (2008))
	- To be willing to admit mistakes when they are made (*Relational Transparency* in Walumbwa (2008)
	- Honesty (*aspects of the research process* in Resnik, 1998) Scientists should not fabricate, falsify, or misrepresent data or results. They should be objective, unbiased, and truthful in all aspects of the research process.
m ***Integrity***:	
	- To demonstrate beliefs that are consistent with actions (*Internalized moral perspective* in Walumbwa et al (2008)).
	- To make decisions based on his/her core beliefs (*Internalized moral perspective* in Walumbwa et al (2008))
n ***Creativity***:	
	- *Openness to Change* from Sagiv et al. (2017): *Self-Direction*: Independent thought and action—choosing, creating, and exploring (freedom, creativity, independent, choosing my own goals, curiosity); *Stimulation* Excitement, novelty, and challenge in life (exciting life, varied life, daring);
	- *Intellectual process* from Bazeley (2010): creative-innovative; analytic thinker; curiosity-open mind.
o ***Practical wisdom***:	
	- to be able to choose the accurate means to produce virtuous behaviour in a variety of circumstances where individual virtues are at stake
	- to be able to operate the different virtues of the character in a harmonious way.

Note: *The references reported in the right column of the table refer to the studies cited in this section from which the questions and/or items were taken. The remaining questions and/or items are our elaboration from the list of virtues described in the Section "The virtues of a researcher involved in a good research practice".*

It is important to point out that the list of questions and items reported in Table 1 is not exhaustive. It represents a first rough base for developing a preliminary questionnaire for attempting a quantitative assessment of the virtues of researchers.

Our model, built on Snow's recent works, includes several tools that may allow us to introduce a quantitative dimension in the evaluation of virtue. This may allow us not only to evaluate more concretely the ability that a researcher has to contribute to the achievement of internal and external goods to the practice, but also to verify how a certain environment is conducive to the cultivation and transmission of virtues.

Let us briefly dwell on some of the immediate benefits of an evaluation of research that includes these instruments. Firstly, the evaluator can take into account *not only the outputs*, but also the *potential* of the researcher. This information is crucial both when deciding on the advisability of giving the researcher new job opportunities and when making a choice between researchers who may have reached the same scientific achievements in terms of outputs. Secondly, these tools allow to identify the reasons why a research group/institution/department produces certain results and not others. Being able to verify, through an empirical survey, whether the group discourages, for example, empathy among its members or does not tolerate expressions of pride and self-esteem, unless leaders makes them, exhibit flaws in the practice and suggests at the same time remedies to improve the group's performance.

Having said that, it is worthwhile to say a few words about other more general advantages deriving from the cultivation of virtues within research practices that do not directly concern the positive effects they have on outputs, but rather the function they perform on the psychophysical health of researchers. According to a model that was originally formulated in an empirical study on the well-being of adolescents in an US colleges, good schooling must not only aim to ensure a high level of learning, but must take into account how programs and school life affect the overall flourishing of the character of their students (Seligman, 2011, 2012, White, 2014, pp. 2-3). According to this research, individual flourishing depends on the satisfaction of at least five elements: positive emotion, engagement, relationships, meaning, and accomplishment (PERMA). The achievement of these goods, says Seligman, is based on the cultivation of the virtues of character. Although there are still no empirical studies in the field, it seems plausible to argue that a similar model can be used to explain the satisfaction that comes from performing one's duties within research practices. A satisfaction that reaches its peak when we gain the awareness that the achievement of the internal goods of the practice are functional to the achievement of its external goods, i.e. the human needs and prestige of the institution in which we work. However, as has been mentioned several times, it is only through the cultivation of virtue that we can hope to achieve internal goods and create a stable balance with external ones.

Conclusions and further developments

We attempt to deal with clarifying and discussing what it means to make a "good" research evaluation. We propose a framework based on the relevance of the concept of research as a social practice, as described by MacIntyre (1985). We maintain that the most appropriate level of analysis to make a good evaluation of research is to refer to "research practices" according to MacIntyre's definition (Hicks and Stapleford, 2016; Bezuidenhout, 2017). With this contribution, we support and provide a theoretical background to the consolidated bibliometric literature (see e.g. Van Raan (2004, 2019), Moed (2006, 2017) and Glanzel et al. (2019)) that highlights the importance of evaluating research groups instead of individual scholars in isolation.

Resnik (2012, p. 341) identifies the need of further research "to describe the virtues that operate in science, explore how scientists learn moral virtues, and determine the extent to which virtues have an impact on scientific thinking and behaviour." We have worked on several levels to contribute to this lack of knowledge: by developing a general model centred on the notion of social practice; by identifying three different types of researchers; by proposing a list of virtues; by indicating the elements on which to build a questionnaire that can measure the intensity of the mastery of virtues in researchers.

Our contribution is also to try to raise the very heated debate on research evaluation policies, moving the discussion *from the ideological sphere* (based on being in favour or against evaluation regardless of the evaluation context) to that of *contents*. This means analysing what we are measuring and why, before discussing how and when to measure it.

Speaking of good evaluation and good research practice also contributes to shifting the focus of evaluation from the outputs of research practices to the *functions* performed by participants in research practices on the base of their virtues. This would indeed represent a "paradigm shift" in the field of research evaluation.

The model we propose can be used for different types of evaluation and offers a *self-assessment* tool for researchers, to understand the functions of their research activities, their motivations and where they are in their research practice. This is an important step towards the *improvement* of research practices and individual behaviour involved in it. This can help institutions to collect and *describe* the main functions of the research practices (highlighting their special features) developed by its researchers, and their motivations, to include them in their *strategic plan*. In the last sections, we discussed the possibility of evaluating the characteristics of the individuals participating in research practices.

The preliminary questionnaire proposed in Table 1 represents a first attempt to quantify the virtues of researchers involved in research practices. It should be extended, tested and consolidated. Another very important aspect concerns education. That is to investigate how virtuous behaviours are taught, communicated and learned through models, exemplars (e.g. Zagzebski, 1996; Nakamura, and Condren, 2018). All these aspects are left for future work.

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