

Impacts of Non-Academic Research Impact : Toward a Tripartite Model of Research Assessment¹

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The introduction of the “impact element” or assessment of non-academic research impact into UK’s REF (Research Excellence Framework) in 2014 has led to a wide recognition concerning the multiplicity of academic research’s is worth. Yet, the ongoing debate regarding the practical significance (and ramifications) of scholarly research does not necessarily fully address the possibility of a multi-dimensional evaluative system. Especially, the recent debate tends to bypass a careful analysis of an important distinction between publishability and excellence. On the basis of a critical review of the UK’s nation-wide research assessment system, this essay presents a threefold classificatory scheme of evaluative criteria for research outputs. The scheme consists of publishability, academic excellence, and policy/practice impact as three major domains of (e)valuation.

I Lessons from the UK

Research Assessment Exercise (RAE) and Research Excellence Framework (REF)

UK’s Research Assessment Exercise (RAE) is arguably the best-known national research evaluation system in the world. It has often been regarded as the exemplar for research assessment and indeed some of its ideas and ideals have been widely imitated (or regarded as a negative example) internationally. Beginning first under the name of Research Selectively Exercise in 1986, it was carried out five times since then (1989, 1992, 1996, 2001, 2008), and was replaced by the REF (Research Excellence Framework) in 2014. The second REF is now underway and is supposed to be completed by 2021.

While the RAE/REF is said to have the dual functions of assuring and enhancing

¹ Parts of this essay are based on a working paper that was published in 2013 (Sato 2013).

quality or research on the one hand, and the allocation of funding on the other (Roberts Report 2003 : 164 ; PA Consulting Group 2008 : 9 ; Stern 2016), the latter function figures most prominently for the fates of UK's higher education institutions (HEIs²). In fact, the RAE/REF has served as one of the most important devices for selective research funding to the UK's HEIs. In other words, the RAE/REF has been a key selective criterion in the UK's "selectivity and concentration" policy, thus served as an important restructuring device.

For each HEI, the result of the RAE/REF determines the "quality-related" part (about 20 percent of the whole³) of the block grant that are supplied by one of the four funding agencies : HEFCE (Higher Education Council for England⁴), SFC (Scottish Funding Council), HEFCW (Higher Education Council for Wales), and DELNI (Department for Employment and Learning, Northern Ireland). While the assessment measures and the weighting given to each measure have been changed frequently and subjected to panel judgments, research quality has been given the largest weight throughout the assessment exercises (Goldfinch and Yamamoto 2013 : 129-131). For example, minimum weight given to research quality was 50 percent in the case of the 2008 RAE, while minimum weight for "peer esteem" and "research environment" is five percent for each. Achieving a higher rating for research quality or research "excellence," then, has been the most serious concerns of the HEIs that participate in the assessment exercise.

Criticisms of the RAE and the Introduction of the Non-academic Impact

Whereas the RAE has been considered an exemplary model of national research assessment around the world, it has also been subject to intense criticisms with regard to its technicality of both measuring research quality and using the results of the measurement for selective allocation of public research funds. Criticisms have been raised not only from the camp of "losers" of the assessment game but also from the winners' camp.

Especially, considerable monetary costs expended for the review process have been repeatedly criticized. In addition, panel members have to devote a considerable amount of time in reading an enormous amount of research outputs. Since the panel members themselves

2 McNay (2003 : 48) points out that the two purposes are technically separated. But as he later commented, for most people they are inextricably bound.

3 It should be needless to say that there is a great variation in the percentage that quality-related research fund occupies in the total block grant of each university. For example, while research fund for Oxford University comprise 75 % of the total block grant it received from the HEFCE, it was 13% in the case of Oxford Brookes University (Goodman 2013 : 46).

4 HEFCE ceased its operation in 2018 and its administrative function for the REF has been transferred to the Research England.

are, by definition, excellent researchers, the time lost in the evaluation could have been directed to excellent research. The RAE/REF has also transformed the culture of the UK university system. The distinction between “research active staff” who are eligible for submissions and those who are not has made a serious cleavage within many HEIs. Internal stratification at HEIs is further facilitated by the changes in the employment policy aiming at higher rating of the RAE. The increasing meritocracy accompanying the “audit culture” (Power 1997 ; Strathern 2000) is sometimes said to have deteriorated collegial culture of the UK’s universities. Closure of specific departments which were unsuccessful or were expected to underperform in the research assessment is another target of criticisms.

Partly in response to these criticisms, a wholesale review was carried out in 2003 by a committee led by Sir Gareth Roberts. In other words, the assessment system itself was subject to a systematic assessment. A number of changes were introduced into the RAE 2008 on the basis of the recommendations included in the Roberts Report. One of the chief changes is the replacement of discontinuous rating system by quality profile, mapping the ratio of research outputs rated at each scores.

While these changes were themselves drastic, a change introduced in the REF 2014 were more drastic in that it introduced research’s non-academic impacts as one of the three major evaluation components, comprising the weight of 20% : the other two were research quality (65%) and peer esteem (15%).

II Multiple Dimensions of Research Assessment

From One-dimensional Assessment to a Multi-dimensional One

The introduction of non-academic research impacts into REF 2014 was apparently based on the recognition that too much emphasis was put on research’s significance to academic circles in RAEs. In other words, the REF is supposed to be more multi-dimensional assessment exercise than previous ones. Even in the case of the RAEs, a variety of measures were adopted in addition to the assessment of a certain number of research outputs for each eligible faculty members. Yet most of those measures, such as research income, research environment, and research students were concerned with research performance in a narrow sense of the word. Similarly, while some RAE panels included research users as well as academics, much more weight was given to academic work rather than to applied work (McNay 2003 : 52).

At this point, it should be noted that the REF is a latecomer regarding the introduction

of non-academic research impacts as one of its major assessment criteria. Research Councils, which provide grants for individual research projects and constitute another arm of the dual funding system for research in the UK, have emphasized economic and social impacts since the early 2000s. As elucidated by Oancea (Oancea 2013), this concern with non-academic research impacts or policy/ practice impacts has complex roots in policy discourse.

In any case, the introduction of practical impacts of research suggests that there has been a fairly wide recognition that significance of research can be evaluated in terms of multiple criteria.

Distinction between Publishability and Academic Excellence

Arguments about non-academic impacts suggest that there are at least two criteria by means of which a research can be evaluated : academic excellence and policy/practice impact, or practical impact. Academic excellence in this context refers to the merit and worth of a certain research output that are recognized within academic circles. On the other hand, practical impact of a research is the worth that is appreciated beyond academia, by the users of the ideas and findings included in the research. It should be obvious that these two domains of worth are not always mutually exclusive. In fact, certain types of excellent researches may also have great applicability to practical problems and are quite “impactful” for their users. On the other hand, not all researches necessarily have both of these two types of worth. For example, a research that is highly evaluated within academia may not have immediate applicability to practical problems. Similarly, a highly impactful research may have only modest worth as an academic research.

Although complex issues are involved in the interrelationship between the academic excellence and practical impact, it may seem that the dichotomous distinction itself has certain validity. In fact, the dichotomy between pure (or basic) and applied sciences and the cultural values attached to this dichotomy are closely related to the existence of these two dimensions of worth and evaluation. UK Research Councils’ funding framework “Excellence with Impact” also seems to show that there is a fairly wide recognition of the two dimensions as being crucial axes of evaluation. On the other hand, various parties, including Research Councils, university staffs, consulting firms and researchers specializing in research assessment are busy in developing measures for research impacts and toolkits for impact case studies.

Even a cursory review of the literature on the national research assessment system in the UK (viz. RAE and REF), however, reveals that not only the balance between academic excellence and practical impact but also measures for academic excellence have been subject

to intense criticisms. In fact, one of the most intense criticisms against the RAE/REF was the technicality of the measurement of “research quality.” One of the most telling criticisms regarding this issue was the overemphasis on journal articles as “research outputs” that are to be assessed. Since the third RAE that was carried out in 1992, the number of research outputs for each eligible staff member was set to “up to four.” Although publication count had been dropped from the 1996 RAE, it was quite natural that universities expected that subject panels tended to make more favorable assessment for those UoAs (Units of Assessment) which have submitted maximum number of research outputs.

It has been pointed out that UK’s HEI-based researchers tend to put their effort into the publication of a certain number of academic papers rather than concentrating on relatively few research outputs that may eventually attain real excellence. It has been also pointed out that the technicality of the RAE/REF has led to the cyclicity in research publications (Shattock 2009 ; Richards 2000). In other words, it is plausible that technicality of the RAE has spawned undue emphasis on publishability rather than academic excellence per se among researchers as well as among university administrators.

These widely recognized unintended consequences arising from the technicality of operationalizing “research quality” suggest the necessity of making a distinction between publishability and academic excellence per se as the two major components comprising “research quality.” (It seems that this distinction is made in some form or other by each subject panel, while its details are largely unknown⁵.)

Publishability, Academic Excellence, and Practical Impacts

The foregoing discussions suggest that there are at least three types of criteria by which a research output could be evaluated : publishability, academic excellence, and practical impact. It should be noted that these three are not simply the criteria that others could employ in assessing the total quality of someone’s research for the purpose of selective resource allocation. They are also closely related to the fundamental incentive and reward system of scientific research for individual researchers and educational institutions.

For example, for an individual researcher, publishability of one’s own research is a basic requirement for securing academic employment and attaining job security and promotion. For the HEIs in a country where public research funds are allocated on the basis of

⁵ This distinction should be quite important for research assessment in Japan, where the low ranking in the worldwide citation tables and stagnating publication counts are often cited as *the* major indicator showing the declining research capabilities of universities.

the results of national research assessment, publishability of their staff members is a prerequisite for their survival as research institutions.

On the other hand, major incentives for researchers pursuing academic excellence may be recognitions by their peers. Enhanced self-esteem may be also crucial in undertaking and completing potentially excellent researches. For HEIs, having a stable of excellent researchers will serve to maintain and enhance their institutional prestige, which may also contribute to acquiring financial supports from private sources and recruiting promising academics and students.

Academics who undertake research having potential practical impacts may be eventually rewarded by a considerable income, while for some academics, appreciation by practitioners, users, and beneficiaries of their findings (e.g., engineers, clinical doctors, patients) may be far more rewarding. For HEIs which encourage their staffs to engage in application-oriented research may expect substantial revenue from ventures in university-industry collaboration.

Scientific activities are not only driven by individual researchers' and institutions' interests, they are also often dictated by moral and cognitive norms that are widely shared in academic communities. In other words, scientists are involved in research activities and publish their outcomes in certain ways not only because they expect that they can gain some individual benefits but also because they think that doing so is morally appropriate or a taken-for-granted matter (cf. March and Olsen 1989 ; March 2009).

In the case of publishability, making public and thereby not concealing one's own ideas and findings are one of the utmost moral norms of academia where science is regarded as a collective pursuit (Merton [1942]1973). Academic excellence is closely related to the moral norms of disinterested quest for the scientific "truth" or extension of scientific knowledge. While, as pointed out above, researches are often carried out in pursuit of some self-interest and, therefore, are means for some other ends, quest for epistemic progress is often carried out for its own sake. It should be needless to say that contribution to practical purposes and public welfare is a crucial moral mission of scientific activities and those who are involved in them.

Publishability, academic excellence, and practical impact are, then, both dimensions of evaluation (what could be evaluated in research assessment) and valuation (what are valued by researchers and HEIs). Whereas arguments about research assessment tend to focus on the appropriateness of evaluative measures, this essay argues that we should take account of multiple dimensions in both evaluation and valuation. A major reason for emphasizing this

dual aspect is that failing to take account of both the evaluation and interests and concerns will lead to simplistic assumptions about motives and behaviors of individual researchers and research institutions, especially HEIs.

For example, it seems to us that the UK's RAE/REF is a typical example of national research assessment system that is based on a rather simplistic assumption of incentive and reward system of science. It has relied mostly on a "carrot and stick" approach, by rewarding "winners" with relatively abundant research moneys and prestige and penalizing "losers" or less successful institutions. We should pay careful attention to the introduction of national research assessment system, because any changes in the funding scheme and introduction of national research assessment system could give grave consequences to the fundamental reward system of science (Crane 1976 ; Rosengren 1983, 1994 ; Peterson 1994).

Three Domains of (E)valuation

On the basis of the foregoing arguments, this essay proposes threefold classification of worth and evaluative axes of research as three domains of "(e)valuation" (Lamont 2013) : publishability, excellence, and applicability. For brevity's sake and for other reasons elucidated later as well, academic excellence is called excellence. Similarly, practical impacts are called in the following discussions "impact."

To reiterate the foregoing discussions, publishability, excellence, and impact are regarded as the three major interests and concerns that researchers have in mind regarding the eventual consequences of their own research outputs. On the other hand, they are also three types of criteria by which others (e.g., academic peers, panel members, funding bodies) evaluate intrinsic and/or extrinsic worth of specific research outputs. Each of these three domains constitutes a distinctive arena of "game," in which distinctive rules apply and characteristic types of prizes and rewards are at stake.

While there are often considerable overlaps among these three domains with specific research outputs, there are also areas of incommensurability among the three ; while a certain research output may be evaluated quite low in a domain, it may be highly evaluated in another domain. In fact, these domains differ from each other with regard to such matters as major types of audience and gatekeeper, time horizon, and susceptibility to operationalization in terms of quantitative indicators.

Table 1 shows the major attributes of the three domains.

Table 1 Three Domains of (E)valuation

		Publishability	Excellence	Applicability
Epitomizing Phrase		Publish or Perish	<i>Ars longa, vita brevis</i>	Necessity is the Mother of Invention
Typical Research Outputs		Journal Articles, Monograph from Scholarly Publishers	Journal Articles, Monograph from Scholarly Publishers	Patents, Technical Reports
Major Audience	Gatekeepers	Journal Editors, Referees (academic peers), Acquisitions Editors	1 st Phase : Journal Editors, Referees (academic peers), Acquisitions Editors / 2nd Phase : Academy Award Selection Committee (e.g., Nobel Committee)	Academics / Practitioners
	Readers/ Users	Academics (often few in number)	1 st Phase : Academics (often few) / 2nd Phase : Academics, Laymen	Academics/ Policymakers/ Practitioners
Typical Indicators for Research Assessment		Number of papers, Citation counts, h-index, Impact factor	Major Academic Awards	Case Study, Patent
Major Rewards		Material	Symbolic	Material/Symbolic
Pathology		Scientific Misconduct (Fraud, Plagiarism), Salami Publishing, Premature Publishing, Short-termism	Hallow Theories, Cloistered Academia, Self-indulgence	Short-termism, Incrementalism, Suppression of Serendipitous Discoveries
Time Horizon		Short	Long	Short to Fairly Long

This table is presented here as a heuristic scheme in order to explore the possibility of multi-dimensional evaluative scheme, and the following sections of this essay attempt to elucidate the characteristics of each domain.

III Publishability : Publish or Perish

The Role of Publication for Researchers and HEIs

[Publication is] the very heart of modern academic science——at levels ranging from the epistemic certification of scientific thought to the more personal labyrinths of job security, quality of life, and self-esteem (Mahoney 1985 : 30 ; See also Nosek, Spies and Motyl 2012 : 616).

As tellingly epitomized by the phrase “publish or perish,” to publish findings and ideas obtained through scientific undertaking is one of the most serious concerns of academic researchers. While a variety of factors other than publication (e.g., job market, personal connections, personality, chance and luck) often weigh considerably in academic employment, having a strong list of publications is a (sometimes *the*) prerequisite for surviving as a successful researcher ; a CV (curriculum vitae) with strong publication list helps one to get hired at some HEIs or other types of research institution and promoted to a stable position there. Similar things can be said of HEIs, especially if a substantial portion of public fund is

allocated on the basis of overall research performance at the institutional level. In fact, the global spread of the national research assessment system combined with quality-related selective research funding has added a new twist to the phrase “publish or perish.” Just as an individual researcher without a strong list of publications tend to disappear from the academic scene and may eventually “perish,” a HEI without strong portfolio of publications may perish or lose its independent status by getting merged with another institution.

There are various types of publication, including among others, proceedings of academic meetings, occasional papers, working papers, grey literature, journal articles, monographs, and chapters in edited books. While the advancement of information technologies has transformed the concept of academic “publication” to a considerable extent, relative merits of various types of publications has long been relatively unchanged. Over the last two decades or so, however, requirements and technicality of research assessment have given considerable influences on the relative merits of various publications.

In many academic disciplines, especially in natural sciences and “harder” social sciences such as economics and several branches of experimental psychology, what counts most is journal articles, especially those articles published in leading journals. In the case of “softer” social sciences and the humanities, monographs have been as important as journal articles not only as a medium of communication but also as a proof of their authors’ academic achievements. Especially, monographs published from major university presses or prestigious scholarly publishers are highly evaluated in research assessment. In the case of a fledging researcher who has just completed doctoral program, the publication of his or her Ph.D. dissertation as a monograph is crucial not only as a kind of *rite de passage* but also as a credential for job application. In some disciplines such as history in which a book-length treatment is thought to be crucial for elaborating and elucidating author’s arguments, monographs have sometimes been regarded much more important than journal articles. As will be discussed later, however, the introduction of national research assessment system has given great influences on the relative weight given to monographs vis-à-vis journal articles.

Gatekeeping in Academic Publication

Both in the case of journal articles and monographs, those publications that have got thorough peer review or so-called “informed peer review” are often more highly evaluated than those that have not. Peer review is thought to be a crucial process in controlling, and in some cases upgrading, the quality of research outputs and thus bestowing a certain authority and legitimacy to the publications.

While details of the review process differ among journals, journal editors and reviewers (or referees) are two principal types of gatekeepers in the case of peer review for academic journals. As for monographs, acquisitions editors at university presses or commercial publishers often play a crucial role in winnowing from incoming manuscripts (Powell 1985 ; Coser, Kadushin, Powell 1982). The selected manuscripts are then submitted to a number of outside reviewers for comments about publishability and necessary revisions. The final publishing decisions are usually made at the editorial board in the case of university presses. As for commercial publishers, negotiation between acquisitions editors and press executives are often enough for a manuscript to get published. It is probably for this reason that journal papers are sometimes thought to be more valid measure than monographs in gauging authors' research ability (Powell 1985).

Notwithstanding the rigorous procedures taken to select publishable manuscripts, the readership of published papers is often quite small. There are tens of thousands of scientific journals all over the world. Even if we limit this to journals included in the Web of Science, the number exceeds 20,000. It is a relatively well-known fact that even in the case of subscribers to a journal, many of them read only certain numbers of articles published in the journal. In fact, "the motivation to read seems to fall far short of the motivation to publishing" (Mahoney 1985 : 31 ; See also Corner 2009).

Journal Papers and Quantifiable Productivity

Irrespective of the dearth of readership, refereed journal papers are generally regarded as reliable indicators of individual and institutional research performance not only for the review process but also for their susceptibility to quantification. Quantified measures make it possible to compare relative qualities of papers and for that matter their authors. Aside from rather simple measures such as a number of papers published, other bibliometric measures that are assumed to gauge the quality of specific paper or journals have been developed. Such measures include, among others, impact factor, citation counts, and *h*-index. Rankings of journals in specific academic disciplines also serve as important information in making comparisons among journals as well as articles published in them. Numerical analysis of the quality of journal papers has been facilitated by the expansion of worldwide data bases such as Web of Science, Scopus, and Google Scholar.

These indicators are used not only for comparisons among journals and their articles but also for cross-national comparisons of research base. To raise the international ranking of citation is sometimes mentioned as an important target of higher education policy in many

countries.

Evaluation based on published research outputs, especially peer-reviewed journal articles, has a great appeal to various parties involved in the research assessment, because of its apparent transparency and cost-effectiveness. Since a refereed paper has been, by definition, already judged to be worthwhile by editors and referees, it is thought to be an efficient and effective way to guarantee accountability. Susceptibility to quantification will also make it easier to compare research performance of various institutions or their departments and schools. Quantified measures may also lighten the workload of panel members who sometimes have to read the entire texts of submitted articles.

Scientific Misconducts and Other Negative Consequences

There are a number of obvious merits in using published, quantifiable research outputs in research assessment. Focusing on publishability is also a clever strategy for individual researchers and HEIs. Undue emphasis on publishability, however, sometimes leads to a number of negative consequences.

Although publication is ideally a natural outgrowth of research activities, sometimes papers or books are published on the basis of little or no genuine research activity. Producing such papers and books are typical examples of “scientific misconducts.” Scientific misconducts include such dubious practices as various types of fraud (fabrication, manipulation, and suppression of data) and plagiarism. If not always regarded as outright scientific misconducts, so-called salami publishing can be also regarded as a symptom of excessive preoccupation with publishability. This practice consists of publishing basically the same content in different papers. Some also attempt to increase the number of papers by slicing the same data set into small chunks, each of which is published as a separate paper.

These outright scientific misconducts and marginally questionable behaviors often originate from Mertonian anomie, where there is a considerable gap between culturally defined goals and the institutionalized means available to attain the goals (Merton 1938 ; Hackett 1994). In fact, when academic employment and academic prizes are highly cherished values among researchers yet there are few opportunities to attain publishable research results, some researchers may resort to illicit or morally dubious measures.

These scientific misconducts and marginally deviant practices are usually treated as behaviors of individuals who are excessively preoccupied with publishability for their job security or vain self-esteem. On the other hand, HEIs can also encourage their staffs to publish a certain number of papers by any means. For example, it has been frequently pointed out that

the schedule of the RAE/REF has led to homogenization of the content of published papers because researchers are pressured to produce a certain number of publishable manuscripts within a limited time span (Shattock 2009). It has also been pointed out that the pressure to secure sure publications has led to under-evaluation of emerging fields of research and interdisciplinary research. Proliferation of academic journals could be also regarded as a symptom of overemphasis on publishability as a sole criterion of (e)valuation⁶.

Publishable but Perishable : Time Horizon of Publishable Research

Armstrong (1982 b), in a rather tongue in cheek manner, proposed the following six admonitions as “The Author’s Formula.”

Authors should : (1) *not* pick an important problem, (2) *not* challenge existing beliefs, (3) *not* obtain surprising results, (4) *not* use simple methods, (5) *not* provide full disclosure, and (6) *not* write clearly. (Armstrong 1982 b : 197 [emphasis in original]; See also Armstrong 1982 a ; Mahoney 1985 : 32⁷).

Armstrong proposed this formula as “a set of rules that authors can use to increase the likelihood and speed of acceptance of their manuscripts.” These rules or admonitions clearly illustrate distinctive characteristics of a sizable portion of scientific articles that have been published in academic journals, including major “high impact” ones. It should be obvious that publishing research papers that stick closely to the above-mentioned rules are by no means misconducts. Yet, many of them are a far cry from research outputs that will eventually deliver real scientific breakthroughs and substantial epistemic progress.

A common thread running through the Armstrong’s six rules is a myopic orientation to research activity aiming at sure and fast acceptance of a manuscript for publication. In fact, failing to follow some or all of the six admonitions may lead to a considerable delay in the acceptance of one’s manuscript. For example, if one picks an important problem that challenges existing beliefs on the basis of surprising results, she or he may have great difficulty in convincing editors and referees about the significance of the ideas and findings

6 In the case of Japan, a remarkable recent phenomenon related to this is the increasing number of in-house journals adopting a referee system in some form or other.

7 Armstrong’s paper was one of the pieces in the special issues of *Behavioral and Brain Sciences*, which featured Peters and Ceci’s (1982) now well-known paper that reports the results of resubmissions of journal articles that have been already published in leading psychological journals (Only the authors’ names and their institutional affiliations are changed to fictive ones.) Of the nine of the 12 resubmitted papers that continued through the review process, eight were rejected mostly on the ground of “serious methodological flaws.”

included in her or his manuscript.

Basic incentive structure of the academic job market that is characterized by the “publish or perish” principle, of necessity, tends to lead to such limited time horizon, especially among young researchers who have not yet secured sure footings in the academic job market. The introduction of national research assessment system is likely to make senior faculty members to have a myopic perspective as well, especially when assessment system assumes that each researcher produces a certain number of research outputs within a relatively short period of time.

The need to publish a certain number of papers within a limited time-span may also lead to homogenization of theoretical perspective in the published research outputs (Shattock 2009 ; UUK 2009 : 5 ; *Lambert Review* 2003 : 84 ; Lee, Pham, and Gu 2013 ; Whitley 2007). As Armstrong’s formula dictates, for a manuscript to be accepted, it is much safer to report predictable results which conform closely to existing beliefs. Conservatism has been frequently mentioned as one of the serious problems of peer review system ; editors and reviewers not only tend to have vested interests in established paradigms but also are likely to be constrained by the worldview of existing paradigms. If this conservative tendency is combined with the pressure to produce a certain number of research outputs within a limited period of time, they may work as deterrent to academic innovations.

Constrained time schedule and the periodical nature of research assessment have yielded another problem regarding the quality of published research outputs in the form of premature publications. It is reported that authors of academic papers tend to decline revisions of their manuscripts when the submission deadline for the RAE approaches. It has been also reported that rush of book manuscripts tended to clog the pipeline of British and American publishers around the RAE’s deadline (Kinmonth 2005 : 164 ; Richards 2000⁸).

Articles and books that are written in haste and without sufficient revisions so as to meet the submission deadline may have relatively short lifespans. They may also have little readership (Corner 2009). In other words, such research outputs may be publishable but at the same time perishable as a medium of scholarly communication. They may also have a very limited potential for the expansion of scientific knowledge. Salami papers are a typical example of such a publishable but perishable research outputs. It is needless to say that peer review process often serves as a safeguard against such perishable publications, if the process successfully weeds out manuscripts that have nothing but perishable content. In fact, refereed

8 Also from the author’s interview with the director of a major American university press.

articles may have longer life duration than un-refereed papers or vanity publications. Yet as shown by Armstrong's formula, review process does not always work that way.

IV Excellence : *Ars Longa, Vita Brevis*

Moral Norms and Practical Exigencies

The arguments in the previous section clearly show that a conflict sometimes occurs between “what is good for the scientist and what is good for science” (Armstrong 1982 a : 88). In other words, at some occasions there is a disjunction between what is beneficial for researchers and research institutions (HEIs) and what is beneficial for science and society at large.

On the one hand, job security, career advancement and self-esteem may be among the chief concerns and interests of the scientists who are preoccupied with publishability. In a similar vein, procurement of enough amounts of research funds may be a major concern for the HEIs that encourage their faculty members to produce a certain number of publications within a specific period of time. On the other hand, disinterested pursuit of extension of scientific knowledge has been traditionally one of the most crucial moral norms of science (For other moral and cognitive norms characteristic of science, see Merton 1973 [1942]; Cournand and Zuckerman 1970 ; Zuckerman 1977 ; Demeritt 2000). Application of scientific knowledge to practical problems for the betterment of society's welfare is also highly valued. The moral norms and cultural ideals sometimes conflict with practical exigencies that researchers and research institutions have to take heed of in order to survive and prosper.

While the cultural ideals of (genuine) epistemic progress and social betterment through application of scientific knowledge are in no doubt ingrained in academic communities and their members, scientists and the institutions where they belong are more than mere machineries or tools made to serve social functions. They have their own interests and needs to survive as individuals and organizations. Many researchers certainly share a sense of mission about epistemic progress and development of socially useful scientific knowledge. But they at the same time have individual needs and social roles other than as scientists (leaders of a research team, faculty members, breadwinner). Similarly, a university is certainly one of the typical examples of “normative organization” in which its members are supposed to be committed to the morally worthwhile goals embodied by the organization (e.g., research, education, enlightenment) (Etzioni 1975 : 40). At the same time, however, a university also partakes of a “utilitarian organization” which is supposed to secure an enough amount of

revenue to remunerate its members. A university also has to survive as an organization.

There often is, then, a conflict between moral norms and practical exigencies, or role conflicts both at the individual and institutional levels. In a similar vein, academic articles and books are certainly important means of scholarly communication and epistemic progress. On the other hand, they also serve at the same time as currencies to be exchanged for livelihood and public funding. Researchers and research institutions often have to juggle with publications that have different combinations of cultural worth and “fungibility” to economic capitals.

Ars Longa : Time Horizon of “Durable” Research

“It is not yet the time for you to take up that kind of research issue. After you’ve secured a tenure-track job, you can tackle such an ambitious research problem.” Fledgling researchers are sometimes given this kind of advice from their mentors. Increasing pressures to produce quantifiable research outputs may make it difficult even for senior faculty members to take up ambitious research topic. Some of them may also be forced to publish a number of articles rather than write a single volume of monograph. In fact, it has been frequently pointed out that the RAE/REF has had an effect of transforming the time horizon of British academics, and great scholars like Max Weber, Emile Durkheim, Wittgenstein, and Einstein could never have completed their works under the current system (Goodman 2013 : 48 ; Cowen 2001 : 83).

What is likely to be sacrificed by the undue emphasis on publishability or quantifiable research productivity is the longer time horizon that is often required for genuinely innovative scientific ideas to be conceived, elaborated, and eventually published. Evaluation of such innovative ideas may also take a fairly long time. A typical example is a mathematical breakthrough that needs hundreds of pages to elucidate. Other mathematicians also need hundreds of hours to examine the validity of the proof. While such an elucidation may not be completed in a short period of time, it will have a long-lasting life as a groundbreaking idea⁹.

While a considerable part of publishable research outcomes may barely survive the lifetime of their authors, durable ideas will have longevity far beyond the lifespan of their originators. Given conservative nature of many academic journals, truly innovative ideas may be rejected by leading journals and eventually find their outlets in obscure journals (Goldfinch

9 To quote a recent example, it took almost fifty years for the existence of so-called “Higgs boson” is tentatively confirmed. While Peter Higgs who predicted the existence of the particle was alive when the CERN announced the result of its experiment, it is not rare that the great scientific idea of a researcher is confirmed posthumously.

and Yamamoto 2013 : 80). In the case of the humanities and the social sciences, such a genuine breakthrough is often presented in the form of a monograph, often quite a voluminous one to be characterized as a “tome,” rather than in the form of relatively short journal articles. Yet, the major databases that are used to calculate citation counts and impact factors include relatively few books.

Gatekeepers for Groundbreaking Scientific Ideas

We regret to say that our united opinion is entirely against the book as we do not think it would be at all suitable for the Juvenile Market in [England.] It is very long, rather old-fashioned, and in our opinion not deserving of the reputation which it seems to enjoy. (Rejection letter from a publisher to Herman Melville about the manuscript of his *Moby-Dick*)

The above quotation is from *Rotten Rejections : The Letters That Publishers Wish They'd Never Sent* (Bernard 1990), a collection of rejection letters sent from book editors to the authors of manuscripts. The rejected manuscripts include those of books that later became magnum opus of great novelists, such as James Joyce, Theodore Dreiser, and F. Scott Fitzgerald. For example, in the case of Beatrix Potter, after her manuscript of *The Tale of Peter Rabbit* was turned down by seven publishers, she had to pay for its publication herself. The same fate awaited when Marcel Proust sent the manuscript of his *Remembrance of Things Past* to several publishers. While discerning acquisitions editors often serve as quite skillful gatekeepers, their ability may not work well for the works that exceed their capacity of comprehension.

A similar thing can be said of “informed peer review” for manuscripts of scientific papers. Although peer review is often recognized as a quite effective means of quality control, this system does not necessarily work well as a means to facilitate scientific innovations. On the contrary, it is well known that the peer review system often work as a conservative screening mechanism. In fact, the “quality” that is controlled by the review system may not exceed the level of gatekeeper’s ability of comprehension (Wada 2012¹⁰). Given the

10 An episode reported by biographers of Ludwig Wittgenstein is instructive in this regard. Bertrand Russell and George Edward Moore were examiners when Wittgenstein’s *Tractatus Logico-philosophicus* was submitted as doctoral theses at Cambridge University. It is reported that at the end of discussions, Wittgenstein slapped Russell and Moore on the shoulder and said, “Don’t worry. You’ll never understand it.” (Edmonds and Eidinow 2001 : 36-37).

conservative nature of many academic journals, truly innovative ideas may be rejected by leading journals and eventually find their outlets in journals of modest or low “impact factor,” or even in obscure journals.

When the scientific ideas find its outlet in an obscure journal, the readership may be small even as compared to the tiny readership for many articles in leading journals. Yet the readership will grow in size as the groundbreaking nature of the treatise is gradually acknowledged within academic circles. The number of readers of a research output may increase dramatically when its author is eventually given some major academic award. In such cases, the members of academic award committee serve as gatekeepers in this second phase. Being granted a major academic award occasionally leads to re-evaluation and eventually revival of an important research which has been long buried in oblivion.

Various types of laymen, including those scholars who are not specialists of the issues treated in the papers, as well as specialist academics, become the readers of the research outputs. The mass media may also play a crucial role in propagating the innovative ideas, although often not in their original forms but in popularized and sometimes vulgarized forms.

Pathology of (Self-proclaimed) Excellence

Researchers who are mainly concerned with research excellence direct themselves to future audience as well as to contemporary audience. In fact, those who are oriented toward genuine epistemic progress are playing a different “game” than those who are primarily concerned with instant publishability. To be a competent player of the publishability game, one must keep abreast of the changing academic scene and have social savvy of knowing what is currently publishable. One should also have empirical savvy in obtaining and processing publishable results (Nosek, Spies, and Motyl 2012 : 616). Having some connection with the social network of the “invisible college” (Crane 1972) or the inner circle of highly productive researchers (and editors of publishers) is also quite effective in becoming a competent player of publishability game, especially if one wants to publish his or her article in a leading journal or publish one’s book from a major scholarly house (see Kanda 2012 : 53-54).

In contrast to this, a researcher who is more concerned with research excellence than with publishability may keep a certain distance from a search for “what’s new” and “what’s hot” in the academic scene. While s/he is not totally ignorant of such trends, s/he is more interested in the epistemic progress of a larger scale than with immediate publishability.

At this point, we should note that just as in the case of the other two domains of (e)

valuation, excellence in this essay does not necessarily refer to the eventual consequence of specific research outputs. Rather it refers to the basic concerns of researchers. To put it in another way, “excellence” in this essay does not necessarily refer to the eventual consequence of specific *research* but to what is (primarily) in mind of the *researcher* when s/he is involved in a research.

So, while researchers themselves may put more weight on excellence than on immediate publication of their own research outputs, their wishes may not materialize ; against their wish their research outputs may perish soon.

It should be also noted that to forgo publishing one’s ideas and research findings for the moment for the sake of self-proclaimed quest for genuine epistemic progress or scientific “truth” may lead to a disassociation with fruitful scholarly communication. Some may resort to vanity publishing or self-publishing for which they can bypass gatekeepers when their submissions are turned down by academic journals or scholarly houses, or if they think that there are few academics who can evaluate their research ideas in a proper manner. In-house journals published from universities or research institutions have been another traditional outlet for the publication of self-proclaimed quest for groundbreaking scientific knowledge. The advance of information and communication technology has made it quite easy to carry out self-publication electronically.

While the word “publication” etymologically comes from Latin *publicationem* or the act of making publicly known, there tend to be few or virtually no “public” in the case of self-publication or publication in in-house journals. Without meaningful communication with other researchers in the same research area, such a self-proclaimed quest for “scientific truth” or “genuine” epistemic progress is often nothing but a self-righteous argument. They are again in conflict with important moral norms of science identified by Merton, organized skepticism and communism (or “communality”), both of which presuppose an academic community which constitutes the “public.”

V Impact : Necessity is the Mother of Invention

Two Types of Research “Impact”

One of the stock characters of the fictional treatments of medical schools in Japan is a medical professor who has neither substantial clinical experiences nor practical medical skills, even while his specialty is clinical medicine. Some may even become the dean of the medical school. The major reason why they made it to the top in the academic ladder is that they

could produce a considerable number of academic papers in leading medical journals. Since such professors have few practical skills, they may not be able to provide cures to ailing patients as effectively as other doctors who remain to be assistant or associate professors until their retirement.

In other words, while these professors may have given great impact to the academic world, they leave few practical impacts to the real-life world outside of academia. Since academic impact rather than practical impact counts most in the promotional decisions in many medical schools, it sometimes happens that those who have published more quantifiable research outputs can secure advantageous positions and enjoy fat salaries. It is no wonder that those who are primarily concerned with material rewards direct their efforts to the production of academic papers rather than practical contributions.

Similar things can be said of the HEIs that heavily rely on performance-based public research funds for their research budget. Especially when the “performance” is measured mostly in terms of the number and quality of journal papers, HEIs will encourage their faculty members to produce more academic papers than to make any substantial contributions to the world outside of academia.

In fact, that was one of the issues pointed out in the *Lambert Review of Business-University Collaboration* that was published in UK in 2003 :

Given the choice between producing an academic paper and working with industry, an ambitious academic is more likely to take the former option : that way lies extra funding for the department, and an increased chance of promotion. The Review came across a number of cases where departments had deliberately not to work with business in order to concentrate all their efforts on raising their RAE rankings. (*Lambert Review* 2003 : 84)

Excellence or disinterested quest for epistemic progress is not the only value that is likely to be sacrificed by undue emphasis on publishability. Applicability of academic ideas and findings to practical problems is another important value that tends to be slighted by researchers' and HEIs' preoccupation with quantifiable publication productivity. It should be also noted, however, that while both publishability and excellence are mainly concerns of academics, impact is also a concern of those who are outside of academia.

In this regard, the distinction and inter-relationship between two types of “impact,” namely academic impact and practical impact are quite important. Academic impact is often measured by citation counts, how a certain article is cited by other articles. While this

indicator measures impact within academic circles, practical impact is to be measured by some indicator showing the contribution that academic research has made to the “real” world.

While the distinction between pure and applied research is not always clear¹¹, applied research is usually carried out so as to provide solutions to specific practical problems. The basic knowledge and skills included in the solutions are typically borrowed from others who are engaged in pure research or curiosity-driven research with little or no particular application in mind. Because academic journals tend to prefer articles including original ideas rather than their applications to practical problems, those engaged in applied research frequently find it difficult to making it to publication, especially in leading journals of high impact factors. Results of applied research often are made public not in the form of academic papers but as grey literature, patents, products, and records of performance. Irrespective of the great contributions that are made to the practical areas, those who fail to produce certain number of academic papers may have to stay at relatively inferior academic positions. Similarly, those HEIs and their departments that have indicated great performance in university-industry collaborations may score quite low in research assessment and acquire little public research funds. In the worst case, universities may decide to close those departments which scored low in research assessment exercises.

In view of the rather inferior evaluation given to the applied research in the academic job market and research assessment system, the introduction of impact element as one of the three major components of the REF 2014 has been perceived as a drastic policy change. Since it was announced formally by HEFCE for the first time in 2009 in the second consultation on the assessment and funding of research, this decision has caused considerable controversies in and around the academic world (Pettigrew 2011). As mentioned at the beginning of this essay, since then “impact” has been a keyword and buzzword in the public discourse about research assessment.

It should be noted, however, criticism against the RAE’s overreliance on academic outputs coupled with under-evaluation of applied research has been around well before the HEFCE’s announcement in 2009. *The Lambert Review*, which was published in 2003, was one of the policy reports that emphasized the importance of practical impact. On the other hand, Research Councils have been active in promoting the importance of non-academic impact by publishing a number of reports since the early 2000s such as *Science Delivers* published in 2002. They have also commissioned a number of impact case studies and

11 Recent developments in a number of academic disciplines such as genetic engineering have further blurred pure research (or “basic research”) and applied research (See Ueyama 2010).

developed guidelines and toolkits for practical impact. The “Impact Pathways” and “Excellence with Impact” framework were integrations of such policy moves.

Such a move among Research Councils is understandable in view of the project-centered allocation of research funds by the councils. Since they often supply public funds to research projects that are explicitly directed to specific practical problems, they are necessarily concerned with the eventual practical outcomes of research. The councils’ own accountability will also hinge on the effective and efficient use of the funds in providing solutions to the specific practical problems, including, among others, business and industry, health care, social welfare, and education.

Measurement of Non-academic Impacts and Users as a Gatekeeper

Ever since the notion of non-academic impact has been introduced in real earnest into the policy discourse about performance-based public funding, the issue of defining and operationalizing impact has attracted considerable attention. A variety of guidelines and toolkits have been developed and a small industry has been formed around the measurement and effective presentation of research impact. As Oancea (2013) points out, this growing concern with the technicality of measurement and reporting as well as the pressing need to prepare for the REF 2014 tended to divert the attention of government and HEIs away from such fundamental issues as quality-related education funding and universities’ accountability for practical implications of research.

One of the major reasons that the technicality of measurement attracts so much attention is the considerable difficulty that accompanies the operationalization of the non-academic impact. While many researchers are relatively well versed in assessing and measuring academic impact, they are in most cases unfamiliar with the evaluation and presentation of non-academic impact.

The following comment in the *Lambert Review* points out this bias characteristic of the RAE’s assessment panels.

[T]he assessment panels tend to concentrate on purely academic benchmarks, such as output in important journals. This may be partly because this kind of research is what most interests the people who sit on the peer review panels. It is also because such work is easier to measure than business collaboration (*Lambert Review* 2003 : 84).

The tendency of the RAE’s evaluation criteria gravitating toward publishability appears

to arise, therefore, as much from the technicality of measurement and panel members' competence as from any other innate reason or rationale of research assessment. It is no wonder, then, that "users" or practitioners are expected to take part in various phases of the assessment of non-academic impact of publicly funded researches. For example, In UKRC's document *Excellence with Impact*, users are supposed to participate not only in satisfaction survey but also in peer review and decision-making. In contrast to the evaluation of publishability and excellence, then, non-academics play crucial roles in the gatekeeping for research with potential practical impacts.

Curiosity is the Great-grandmother of Great Inventions : Temporal Dimension of Research Impacts

It should be obvious that a relatively longer time horizon is often required both in carrying out an application-oriented research and in evaluating its outcomes. While the ideas and findings of a research that is intended to provide immediate solution to practical problems may reach their non-academic users in a relatively short time, in many cases, practical impacts of a research take place only after the research's merits is widely recognized within the academic circles. In other words, non-academic impacts are often brought about only after academic impacts have been established within academia.

It has been recognized that even in the case of academic impacts, a longer time frame is sometimes required for its assessment (cf. Weiss 1980 ; Pettigrew 2011 : 350). For example, in 2009, ISI Web of Knowledge introduced a new function to calculate the impact factors of academic journals on the basis of citation data over five years. Before then, the impact factor had been calculated using the citation data over two years. As mentioned in the previous section, much longer time frame is needed for research oriented to excellence.

One should also note in this regard that there is a possibility that ideas and findings of a research which has been initially undertaken out of pure curiosity may eventually lead to great practical impact. In fact, while researches that yield immediate academic impact may only result in piecemeal innovations, curiosity-driven researches may yield radical innovations. In other words, curiosity as well as necessity is the mother of invention or of applicable scientific knowledge and skills. Or, we might say that curiosity is the great-grandmother of invention.

In view of the complex issues involved in the relationship between academic and non-academic impacts, the time frame for REF 2014 appeared to include a lot of problems. The time frame for the REF 2014 was "up to 15 years" between the publication of some research

output and the occurrence of impacts during the assessment period. Since the beginning of the assessment period was January 2008, UK's HEIs and their departments were able to track back to January 1993.

The time frame of 15 years was obviously arbitrary, although there was a leeway of five years which is subject to panel's judgment. Opinions were divided as to the appropriateness of the time frame. Some regard 15 years too short, while others regard too long. The problem of time lag inherent in the procedure of assessing a HEI's research quality or performance on the basis of those of current faculty can be aggravated if one takes a longer time frame. In fact, an academic's research outputs that eventually led to great non-academic impact may have little or even no direct relationship with the research activities of the department where s/he recently moved in.

Intended and Unintended Consequences of Impact-driven Research

Proper appreciation of the non-academic research impacts may work as corrective measures to the undue emphasis on publishability as the chief interests of researchers and criteria of research assessment. Recognizing the impact of research outputs as one of the legitimate evaluation criteria for research performance of individuals and institutions will open up the highly secluded academia to the wider society. It may also free aspiring young researchers (now senior researchers as well) from obsessive preoccupation with publishability and help to have a longer time perspective about their careers. It will also make it easy for HEIs to form a collaborative and more productive relationship with business firms, local communities, and NPO/NGOs.

Yet, if concerns with the practical implications of research oversteps into an overemphasis on instant impact of research outputs, it will lead to short-termism of research activities. While such near-sighted researches may certainly provide some solution to immediate problems and questions, they may yield only piecemeal innovations. It should be noted that serendipity rather than direct concerns play an important role in the great inventions and applicable academic ideas (Merton and Barber 2006 ; Flatow 1993).

In view of these complex issues, the RCUK's slogan "Excellence with Impact" may be a little bit too ambitious. Just as "planned serendipity" is an oxymoron, to attempt to "maximize both excellence and impact" (RCUK undated : 13) in a planned way may lead to disastrous consequences. After all, you cannot sit between two stools.

VI Conclusion : Ecological Mapping of Three Domains

As is obvious from the foregoing discussions, there are certain overlaps among the three domains. For example, one could point out that researches that are intended to be excellent actually becomes distinguished publications with long-lasting influence. Moreover such research may have abundant impact contributing to the wellbeing of people. In such a case, there is a fortunate overlap among three domains. On the other hand, we can also find instances of research outputs that have only one of the three domains, which lead to certain pathological consequences, as have been described in previous sections of this essay.

A proper balance among the three dimensions is, therefore, crucial with regard to specific research outputs. Yet on the other hand, a university traditionally has been a place where the three domains have coexisted side by side. Namely, a university has included an ecological system where various combinations of the three components can coexist. The resulting dynamics has yielded advancement of scientific knowledge and its applications. In fact, while it may be quite difficult for a single research undertaking to have all three components, the university could as a whole integrate the three systems. Any funding policy and effort to measure research performance that do not take account of this fact and destroy the ecological system will be detrimental to the development of science and its contributions to a society at large.

The UK's experiences regarding the balance among a number of (e)valuative dimensions should be quite instructive to Japan in constructing research assessment systems for university reforms. It should be noted that any lessons from other countries should be carefully calibrated to the distinctive characteristics of Japanese society and its academia. As Yonezawa (2005 : 124) cogently argues, information about university assessment in other countries tend to be introduced into Japan quite unevenly or selectively on the basis of dogmatic arguments that do not have close relationship with internal logics of Japanese society. While the serious budget crunch in Japan does not allow enough time, we should not hastily close the channels of dialogue among various parties on the ground of shortage of time.

Acknowledgement

This research was partially supported by the Ministry of Education, Science, Sports and Culture, Grant-in-Aid for Scientific Research (C) 23530618 and (C) 19K02144. This

research was also supported by a research grant from the Japan Center for Economic Research. I am very much grateful to the Nissan Institute of Japanese Studies at Oxford University and St Antony's College for their supports for a research in the UK for six months. I would like to express my deepest gratitude to Professors Takehiko Kariya and Ian Neary of Oxford University for hosting my stay at the UK.

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