아태연구 제26권 제1호 (2019) https://doi.org/10.18107/japs.2019.26.1.004

Does Governance Matter for Better Research Integrity in South Korea?*

Eunok Im** Sang-Yun Han***

| Contents |

| Abstract |

This study aims at establishing an effective research integrity governance in South Korea by redefining roles and responsibilities of government ministries, national boards and committees, and funding agencies. For the purpose, it examines relevant laws and regulations to identify the major actors that constitute a research integrity governance and the relationships among them. It proposes three alternative models: (1) to strengthen the linkages among extant national boards and committees related to research integrity without any legal reforms, (2) to expand the functions of funding or professional agencies, benchmarking the U.S. system, and (3) to establish a new national body, the National Research Integrity Committee, under the

* This research was funded by National Research Foundation of Korea (Policy study-2015-07) and supported by Kyung Hee University, Seoul, Korea.
** First Author: Assistant Professor, Department of Public Service, Kangnam University.
*** Corresponding Author: Professor, Department of Public Administration, Kyung Hee University.

jurisdiction of the Ministry of Education to administrate research ethics issues across various academic disciplines comprehensively.

▪ Keyword: Research Integrity Governance, Research Ethics, Research Integrity, Research Ethics Education, National Research Integrity Committee

I. Introduction

It is only recent that the South Korean research community started to lay stress on the significance of research ethics. In 2005 the infamous research fraud scandal of Woo-suk Hwang awakened the academic community in the nation and served as a momentum to initiate a debate on the research integrity reforms (Kim & Park 2013). Even in the wake of the scandal, we have observed several research misconducts. Several high-ranking government officials and their nominees, even including the Minister of Education, lost opportunities to serve the position due to plagiarism scandals. In 2015 around 150 professors have been accused of collusion in the fraudulent authorship of college textbooks (*Joongang Daily* 2015/12/16), witnessing the absence of good research practices in South Korea (Korea hereafter, for short).

We attribute underdeveloped research ethics in the nation to the failure of research integrity governance (RIG) in place. A good RIG would facilitate research in good faith and stop any attempts for unethical acts in research activities. We argue that the excess complexity in a governance system as well as the lack of a system may lead to ineffective governance. In particular, any ambiguity in rules defining the procedures, relevant actors, and responsibilities would fail the entire

governance system.

From this perspective, this study analyzes the laws and regulations defining the roles and responsibilities of diverse actors who constitute a RIG, and illustrates the relationships among them. Based on the analysis of current governance system, we propose alternative models for more effective RIG of Korea. This study contributes to the existing literature by highlighting the importance of a well-structured RIG in promoting good research conduct.

II. Definition and Core Elements of Research Integrity Governance

Integrity refers to "the quality of acting in accordance with generally accepted moral values and norms" (Six & Lawton 2013, 641). As a particular application of the term, research integrity is associated with trustworthy, professional and responsible research conduct. In this study, research integrity governance (RIG) is defined as an institutional and organizational structure, in which various stakeholders including researchers, research institutions, funding agencies, government and judicial organizations collaborate administratively to secure research integrity. It pertains to the authorities and responsibilities of participating individuals and parties and the relationships among them as articulated in relevant laws, regulations, or principles. Good governance, as an overarching institutional framework, promotes ethical conduct (Argyriades 2006), clearly defining roles and responsibilities of each stakeholder and explicit rules and procedures for the investigation of alleged research misconducts.

Boesz (2012) considers three requisites for a successful RIG. In

particular, it consists of “unambiguous principles” about all anticipated behaviors, “clear definitions” of what makes research misconducts, and “explicit rules and procedures” to follow for the investigation of any alleged infringements in terms of relevant actors involving the process (Boesz 2012, 8). In a similar vein, the European Science Foundation (2010) proposes the core elements of a framework for research integrity which are commonly adopted across different countries: (1) authorities established through supporting institutions, (2) fairness and transparency embedded in relevant procedures, and (3) well-defined and properly allocated roles and responsibilities. Throughout the study, we consider these requirements to analyze current institutions and system and to develop more effective RIG.

III. Methodology

We analyze the laws and their subordinate regulations to understand the roles of the major actors who constitute RIG including central ministries, national boards, funding agencies, appeals agencies, and courts. To incorporate international perspectives into alternative models, we analyze the cases of various countries including Finland, United States, United Kingdom, and Canada. In-depth interviews with a group of six experts of diverse research backgrounds including research ethics, law, medical science, and public administration are used to supplement our subjective argument. Interviewees were carefully selected considering their experience in research integrity related issues. They have worked in responsible positions for research integrity, or have participated in governmental research integrity campaign or related research activities. The interviews were conducted with online conferences in June and July 2015. During the interviews, they were asked to assess the past and

current roles of central government agencies and to suggest a future direction for the development of short-, mid- to long-term policy goals.

IV. Analysis of Laws on Research Integrity

In Korea, several laws contain articles related to research integrity without a single law comprehensively dealing with it. The current research integrity provisions and regulations are found to be manifold and complicated. Research projects supported by different ministries have created separate but potentially redundant laws for respective areas and disciplines.

The laws that have any clauses about research integrity are: 1) Academic Promotion Act which pertains to research in humanities and social sciences under the jurisdiction of the Ministry of Education (MOE), 2) Framework Act on Science and Technology that regulates the research activities in natural science and engineering under the jurisdiction of the Ministry of Science and ICT (MSIT), 3) Bioethics and Safety Act that contains relevant articles for biomedical science under the jurisdiction the Ministry of Health and Welfare (MOHW) and 4) Copyright Act that contains relevant articles for general literary arts under the jurisdiction of Ministry of Culture, Sports and Tourism (MCST). These four laws are the ones that specify governmental activities in research ethics as a part of their enactment purposes, and thus, the four ministries associated with these laws are evaluated to be the major government actors in RIG of Korea.

1. Major Actors in Research Integrity Governance

(1) The Ministry of Education (MOE)

According to Academic Promotion Act (Ministry of Education 2013), the Minister of Education shall formulate and promote policies to ensure research ethics and may fully or partially subsidize expenses necessary for the universities' activities related to such policies. Universities that receive project funds from MOE shall establish and implement their own regulations on research ethics in accordance with the guidelines on research ethics established by MOE.

Research ethics issues arising from any MOE-funded projects are subject to the Guideline to Ensure Research Ethics which is issued by MOE based on Academic Promotion Act. The Guideline (Ministry of Education 2015) identifies research misconduct as falsification, fabrication, and plagiarism (FFP) in proposing and performing research, or in reporting of research results and questionable research practices (QRPs) including claiming undeserved authorship, artificially proliferating publications and interrupting investigation of misconduct allegations. According to the Guideline, the responsibility for investigating the allegations of research misconduct related to MOE supported projects lies on the institution with which the alleged person is affiliated; the head of the institution organizes an investigation committee based on the institution's own provisions on research ethics, and the committee carries out a preliminary inquiry and investigation to send an investigatory report to the Minister of Education. MOE has established Research Ethics Advisory Committee to seek general advice on research ethics policies or projects. The investigatory reports submitted to MOE and the committee's activities are not open to the public.

(2) The Ministry of Science and ICT (MSIT)

The Framework Act on Science and Technology provides a legal foundation for MSIT's support for national R&D projects. Based on this act of 2014, the National Science and Technology Council[1] was created under the Prime Minister's authority to deliberate on various matters related to science and technology policies. Making a decision on the matters of research ethics is stated as one of the Council's functions. Consisting of the heads of central administrative agencies across all departments, the Council is provided with legal authority to intervene in and deliberate on research ethics affairs in MSIT-funded 'national research and development projects.' However, it has not engaged in any research ethics related agenda during the period of 2014 and 2015.[2]

This ministry has the Korea Institute of Science and Technology Evaluation and Planning under its wing to support the activities of the Council. It is noteworthy that this institute provides training courses in research ethics, laboratory safety, and research notes to researchers participating in the research projects of MSIT, thus becoming a part of Korea RIG.

(3) The Ministry of Health and Welfare (MOHW)

Bioethics and Safety Act, which was first legislated in 2005 and completely amended in 2014, is a basic law applied to research in medical and biomedical sciences under the jurisdiction of MOHW (Ministry of Health and Welfare 2014). On the basis of the Act, the MOHW operates

---

1) With the amendment of the Framework Act on Science and Technology in 2018, the National Science and Technology Council was integrated into the Presidential Advisory Council for Science and Technology under MSIT.

2) National Science and Technology Council (2015), "NSTC Meeting Agenda," http://www.nstc.go.kr. (accessed on August 5, 2015)

the National Institute of Bio-ethics Policy (NIBP) as a responsible government body that conducts specialized surveys, research, and education concerning bioethics policies. Based on the Act, the National Bioethics Committee (NBC) was established as a presidential committee to deliberate on the matters regarding bioethics and biosafety. Further, the Act mandates the establishment of institutional review board (IRB) at each research institute with projects on human subjects or biomedical materials.

(4) The Ministry of Culture, Sports and Tourism (MCST)

This ministry is an important part of RIG because the Copyright Act is under its jurisdiction. On this basis the Korea Copyright Commission was established to deliberate on copyright and other relevant rights, to mediate and conciliate disputes concerning copyright, and to appraise infringement of copyright (Ministry of Culture, Sports and Tourism 2014). The MCST and this commission are also recognized as key actors of RIG because copyright issues arise from any works of research, cultural or scientific.

(5) National Research Foundation of Korea (NRF)

The National Research Foundation is the most important funding agency of Korea that plans, evaluates, and manages research projects on behalf of MOE and MSIT. The NRF has three subordinate organizations with their roles related to research ethics:[3] 1) Academic Infrastructure Promotion Team in the Office of Academic Infrastructure Development that develops policies and regulations related to research ethics and

3) National Research Foundation of Korea (2015), "Organization Information," http://www.nrf.re.kr. (accessed on July 17, 2015)

conducts research ethics training programs, 2) Office of Audit and Inspection which receives a report of suspected misconduct and evaluates the case, 3) Strategic Management Team in the Office of Planning and Coordination that takes follow-up actions related to penalties for any research misconducts.

If research institutions are not able to initiate an investigation over alleged research misconducts due to the lack of relevant expertise, or if a fair and reasonable investigation is impossible, or two or more research institutions involved cannot investigate efficiently, the Minister of Education enforces NRF's engagement in investigation over the cases (Ministry of Education 2014). The Office of Audit and Inspection, however, seems to have played a limited role when investigating these cases.[4)]

(6) Administrative Appeals Agency

When parties involved in the allegations of research misconduct are dissatisfied with the result of an investigation or administrative measure by the institution they belong to or by funding agency, they may appeal to two types of administrative organization before going to the courts: 1) Central Administrative Appeals Commission (CAAC), and 2) Appeals Commission for Teachers (ACT). The CAAC was established in 1985 under the Anticorruption and Civil Rights Commission for which prime minister appoints its members to examine and make a ruling with respect to an appeal against disposition or omission by central and local administrative agencies (Anticorruption and Civil Rights Commission

4) To evaluate the function of the Office of Audit and Inspection (OAI) the authors had sent an inquiry to this office asking for its activity report on research misconduct investigation, but the Office refused to disclose it. In an informal interview, one staff member at the NRF mentioned about the shortage of budget and manpower of the OAI as a main reason for not actively engaging in research misconduct investigation activities.

2014). The CAAC's activity on research ethics has been very minimal; it does not have a sub-committee on this issue and so far only four of 21,711 cases that the Commission reviewed are related to research misconduct: one for doctoral dissertation plagiarism in 2004, two for misuse of research fund in 2013, and one for information disclosure of research misconduct investigator in 2014.[5)]

The ACT was established based on the Special Act on the Improvement of Teacher's Status under MOE. According to the Act (Ministry of Education 2016), teachers including professors can request examination of their appeal against the disciplinary measures imposed by the institutions they belong to within 30 days after they are informed of such measures. The current Commission consists of one standing and seven non-standing members (two professors, two lawyers, and three former principals). Since it deals with any disciplinary actions imposed on teachers for any wrongdoings including adultery, it is very difficult for the commission to get expertise in research misconduct. From 2008 to 2012 period, among 1,057 cases reviewed by the ACT seventeen cases are related to research misconduct.[6)]

(7) Courts

Although various governmental agencies examine and make judgments on the matters concerning research misconduct, only the courts have the final authority to judge whether the process and result of investigation are proper. The court's verdict is about the due process of handing allegation or the extent of misconduct that harms researcher's dignity as a teacher or a public servant (Han 2011). <Table 1> contains the roles

5) Central Administrative Appeals Commission (2015), "CAAC Cases Statistics," http://www.simpan.go.kr. (accessed on November 1, 2015)

6) Appeals Commission for Teachers (2015), "ACT Cases Statistics," http://www.ace.go.kr. (accessed on October 20, 2015)

and responsibilities of various actors ranging from research institutions to courts that constitute the Korean RIG discussed so far.

<Table 1> Functions of governmental bodies, funding agency and courts

Affiliated Authority	Organization	Functions Related to Research Integrity
President	National Bioethics Committee	Deliberation and decision on institutions and policies
Prime minister	National Science and Technology Council	Deliberation and decision on institutions and policies
	Central Administrative Appeals Commission	Administrative ruling
The Ministry of Education (MOE)	Research Ethics Advisory Committee	Advisory function
	Appeals Commission for Teachers	Examination of the appeal
The Ministry of Science and ICT (MSIT)	Korea Institute of Science and Technology Evaluation and Planning	Policy-making, institution formulation, training, and consultation
The Ministry of Health and Welfare (MOHW)	National Institute of Bio-ethics Policy	Policy-making, institution formulation, training
The Ministry of Culture, Sports and Tourism (MCST)	Korea Copyright Commission	Dispute mediation and appraisal of the copyright infringement
National Research Foundation of Korea (NRF)	Academic Infrastructure Promotion Team	Policy-making, project implementation, and training
	Office of Audit and Inspection	Receipt of a report of suspected misconduct and investigation
	Strategic Management Team	Evaluation on penalties
Judiciary	District Court, High Court, Supreme Court	Deliberation, making a ruling

2. Research Integrity Governance Mechanism

The RIG mechanism in Korea operates in three steps: 1) when a research institution or funding agency receives a report of an alleged research misconduct, it initiates investigation and takes disciplinary actions if necessary, 2) if unsatisfied by the accused, a petition is submitted to appeals agencies, and 3) if disagreed by the parties concerned, further appeal is developed into a legal case to be dealt by court.

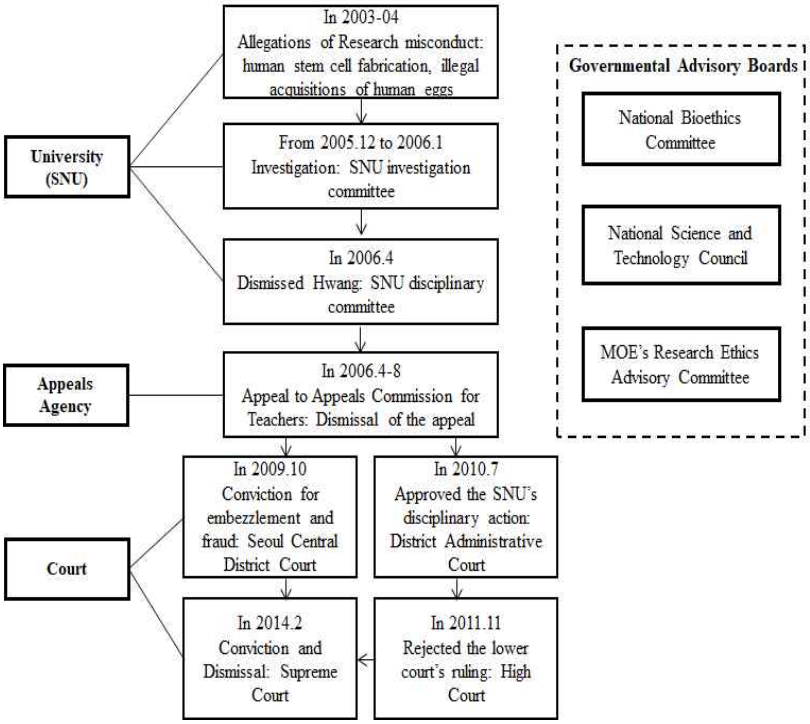
This process may look straight-forward. However, the structure and operation of each step are highly complicated and ambiguous. In particular, in the first step, the roles and responsibilities regarding the investigation of alleged misconducts and further actions are poorly defined and inappropriately allocated among diverse stakeholders in research institutions. For instance, most Korean universities have various committees such as research integrity committee, disciplinary committee, and personnel management committee, and the role of and the relationship among these committees are not clearly specified when handling research misconduct cases. At the second step, a similar type of ambiguity exists in the role of multiple appeals agencies. Even at the final step, the role of each court in the three trial system (District, High, and Supreme courts) is not clear since every case goes to the Supreme Court lengthening the process of handling research integrity cases.

<Figure 1> depicts how the infamous Hwang's scandal of 2003 has been processed thereafter.[7] Woo-suk Hwang was a professor of veterinary medicine at Seoul National University (SNU) at that time. He and his colleagues published papers on human stem cell cloning in a renowned journal, Science, in 2004 and 2005. However, a TV show, PD note revealed their unethical research behaviors including illegal acquisitions of

7) See Kim & Park (2013) for more details regarding the research ethics scandal.

human eggs and data fabrication. The scandalous accusation was developed into the three-month long investigation of SNU which confirmed in 2005 that the research results were falsified (SNU Investigation Committee 2006a; SNU Investigation Committee 2006b). Accordingly, the university's disciplinary committee discharged Hwang from a professorship in April 2006.

<Figure 1> The process of investigation and handling allegations of Hwang's research misconduct



Hwang filed an appeal to Appeals Commission for Teachers. The appeal, however, was dismissed in August 2006. At the same time, in May of the year, the prosecutor's office indicted the Hwang's team for the violation of the Bioethics and Safety Act and mismanagement of

government's funds. Finally, as the Supreme Court judged Hwang guilty of the accusations, he was sentenced to an 18-month suspended imprisonment and two years of probation in February 2014. Concerning the SNU's discharge of Hwang, the District Court supported the SNU's disciplinary action in July 2010, which was overruled by the High Court in November 2011. However, the Supreme Court finally rejected the High Court's ruling in February 2014, saying that the school was right to dismiss the disgraced scientist (*Joongang Daily* 2014/02/28). With the RIG of Korea, the entire process takes too long; 10 years in Hwang's case.

This governance mechanism which may look well-structured seems to have failed in creating better research environment under which responsible research conduct is appreciated and encouraged. Under current RIG research institutions that receive funds from the government are obliged to formulate and implement their own guidelines and training programs to promote good research practices. In fact, they do now have these guidelines and programs in place. But the research institutions, particularly, universities, are very reluctant to strictly enforce related rules and regulation, because any findings of research misconduct are believed to damage their reputation, and it is still not rare in Korea to see even university presidents accused of research misconduct and asked to resign. And it is an irony that in most Korean universities the key person (the dean of research in most cases) who is responsible for securing research integrity is also responsible for securing research fund. The goals of these two different activities are in conflict; although it may not be true in the long term. To be sad, it is very common in Korean universities to measure the research performance of professors quantitatively with poor qualitative measures. These are the examples of negative factors that harm the culture of research integrity. To have the governance be the key to creating a supportive environment for

responsible research, the current RIG of Korea needs to be redesigned to produce better inter- organizational collaboration with more sophisticated goals of research integrity.

V. Alternative Research Integrity Governance (RIG) Models

1. Types of RIG

The Canadian Research Integrity Committee's typology is useful to classify RIG systems, identifying three types of governance systems based on the establishment of five institutional attributes:[8] national legislation, organized central governing body, oversight of research funding organization, national policies and guidelines, and responsible investigator of research misconducts. Denmark, Norway, and the U.S. (Type 1) are characterized by the national level institutionalization through legislation and by a central investigatory agency. The U.K. and Germany (Type 2), on the other hand, depends on the self-disciplinary oversight of research fund-granting organizations rather than national legislation. Lastly, Australia, Japan, and France (Type 3) have it common that the system lacks the national legislation with no central governing bodies. Rather, these countries provide a national code or statement (non-legislated), based on which individual research institutions develop their guidelines for research integrity.

The Korea's RIG system is a complicated mixture of all these systems

8) Canadian Research Integrity Committee (2009), "The State of Research Integrity and Misconduct Policies in Canada," http://www.nserc-crsng.gc.ca/_doc/NSERC-CRSNG/ HAL_Report_e.pdf. (accessed on February 22, 2015)

and hardly fits into a single type. It is not Type 1 because no central legislation or organization governs research ethics issues comprehensively and coordinates different interests across disciplines. Although Science Promotion Act and Framework Act on Science and Technology have provisions regarding research integrity, they are not comprehensive and regulate only department-specific occasions. The Korean case is not Type 3 either, which depends on independent research institutions' self-regulation without national legislation. In contrast, Korean central government bodies set up their policies to support research institutions and monitor research activities of the fund recipients by research ethics laws or regulations. In addition, funding agencies as well as research institutions are responsible for and thus get involved in the investigation of any allegations of research misconduct.

Excluding these two types, the Korean system has more in common with Type 2 which emphasizes the self-regulation of an individual research institution. However, Korean research institutions, in general, lack such capacity. It is partly due to that the unprecedented research integrity scandal of the Hwang in 2005 gave birth to the existing RIG so suddenly without little coordination among relevant parties including governmental bodies and research institutions.

2. Pursuing a New Governance System: A Direction

It may not be necessary to choose only a single type of RIG model previously discussed. Rather, it is important to develop one that stands well with the nation's legal system and research environment. Any new governance system should help the pursuit of research integrity in an effective and efficient manner with a clear understanding of key players, their roles, and responsibilities.

We note two key decisions in designing RIG system. The first decision

is about the degree of the government's involvement. Under the current system, government ministries such as MOE and MSIT set relevant provisions and guidelines to which individual funding and research institutions should conform and have their hands on investigatory activities on alleged scientific misconducts. In this regard, the level of the government's current involvement is not extensive. A potential reform requires the decision on the extent to which the government or its agencies would get involved. The second decision relates to the establishment of a dedicated organization that will play key roles in handling all research ethics issues centrally. Reform may involve a set-up of new agency or assignment of comprehensive authorities and responsibilities to an extant agency.

The experts we interviewed show huge divergence in their opinions regarding these two key decisions. Professor A in law proposes a dedicated research ethics committee that oversees research integrity concerns, while Professor B in public administration who has actively participated in government-funded research disagrees with a government-driven, central oversight agency. Professor C in medical science advocates a European-style, independent national committee. Likewise, Researchers A and B of public research institutes suggest an independent agency at a presidential or ministerial level. On the other hand, Professor D who is an ex-dean of research and ex-chair-person of research ethics committee of a university proposes a standing committee at individual research funding institutions such as NRF.

Giving up developing a single alternative that satisfies all, we propose three different alternatives, mapping them into the dimensions of the two key decisions. The first one is to bring in minimum changes keeping the most of the current self-regulating governance of individual research institutions: Status Quo Alternative. The other two as reformative alternative introduce more alterations to the current system, strengthening

governmental roles as a “control tower” in managing and overseeing research integrity issues comprehensively: Funding Agency-Oriented Governance and National Committee-Oriented Governance. The first type pursues an American approach to establish a dedicated research ethics agency while the other type takes a Northern-European approach to have a research ethics committee under MOE’s supervision.

3. Developing Three Alternative Governance Models

(1) Status Quo Alternative

The first model avoids extended engagement of government agencies and guarantees independent and self-regulating governance of individual research institutions. It allows the relevant national committee’s role as an advisory group of experts only in the case of appeals against research institutions’ decisions. That is, while the roles of central government should be reduced or at best, retained at the current level.

Therefore, the gist of this alternative is to strengthen the ties among research integrity related committees without creating a new organization. This model develops the coordination and cooperation among the established national committees including MOE’s Research Ethics Advisory Committee, National Science and Technology Council, and National Bioethics Committee. Since the national-level committees have played no roles in the appeals process so far, it emphasizes positive roles of these committees in providing expert group’s views and advice to the appeals commission and the court on allegations of research misconducts. As a practical alternative, the MOE’s Research Ethics Advisory Committee which consists of experts in research integrity issues may take a leading advisory role supporting the appeals commissions and courts.

(2) Funding Agency-Oriented Governance

This model is to widen the roles of the National Research Foundation (NRF) and the National Institute for Bio-ethics Policy (NIBP), benchmarking the U.S. system in which the Office of Inspector General (OIG) of the National Science Foundation (NSF) and the Office of Research Integrity (ORI) of the National Institute of Health (NIH) play major roles in securing research integrity. As described previously, the Korean NRF has three sub-organizations that perform research integrity relevant activities. Although evaluating the effectiveness of these organizations' operations is not easy with not much information disclosed,[9] we share the concern with Researcher A interviewed:

> "It is quite questionable whether the Korean NRF has contributed to the development of research integrity in the nation beyond its function of managing research projects. In the aftermath of the notorious Hwang affair in 2005, NRF created a research ethics task force unit. However, as the public lost its attention to research integrity issues, the unit got disbanded in 2011 after several years of inactive service. NRF is the largest research funding institution in the nation, and it should be provided with corresponding responsibilities and authorities over the research activities under their supervision."

Addressing the NRF's ineffective management of research integrity issues, we propose to expand the roles of the extant Office of Audit and Inspection to create a new organization, the Office of Research Integrity with independent function and budget under the NRF to assume the roles

9) In the U.S., the OIG publicizes the outcomes of their activities including research misconduct investigations, through periodic or ad hoc newsletters and reports to Congress (e.g., National Science Foundation 2015). In contrast, the Korean NRF has no such practices, making their performance evaluation hard.

and responsibilities of all relevant internal organizations.

In the area of public health and biomedical sciences, the National Research Institute of Health (NRIH), like the National Institute of Health (NIH) of the U.S., takes the primary responsibility to finance research projects in Korea. Unlike the NIH, however, the NRIH currently does not have an organization in charge of research integrity issues in the areas. Thus, we propose a new organization, the Office of Research Integrity, under existing National Institute of Bio-ethics Policy (NIBP) which specializes in research integrity issues in biomedical science areas. However, as NIBP and the newly created organization under its authority have no control over research funding, the alternative requires follow-up studies about how to resolve the expected conflicts between NIBP and NRIH, both of which are under the Ministry of Health and Welfare (MOHW).

Modeling the U.S. practice that ensures the independence of two research integrity oversight agencies (ORI and OIG), the proposed research integrity offices should be independent of not only MOE and MOHW but also NRF and NIBP concerning personnel management and budgets. Establishing a direct reporting channel to the National Science and Technology Council and the National Bioethics Committee which are relevant national authorities of decisions on research ethics issues may contribute to the independence of these new organizations. In this model, as the Director of President's Office of Science and Technology Policy heads the administrative issues on research integrity in the U.S., the Secretary to the President for Education and Science (currently separated to the Secretary to the President for Education and Culture and for Future Strategy) may play a key role in coordinating the functions and responsibilities of these research integrity agencies.

(3) National Committee-Oriented Governance

The last model requires the integration and substantial expansion of the extant advisory committee into an across-agencies professional committee, namely the National Research Integrity Committee that may assume all relevant functions including investigation and judgment. With responsibilities that go beyond the simple "advisory" function, the new committee oversees all research integrity issues comprehensively across academic disciplines. In this model, MOE should take the leading responsibility because the ministry administrates most research activities and supervises institutions of higher education to which most of the researchers are affiliated. Other ministries including MSIT, MOHW, and MCST are invited to participate in the process recommending committee members and forming sub-committees in its field.

Importantly, an effective implementation of this alternative may require legislation and/or amendment of laws. The committee may consist of 25 to 30 members with research ethics expertise including professors, medical doctors, and lawyers. It may also invite a few non-expert lay members to reflect the public's view on relevant issues. The committee's responsibilities may be set to cover research integrity issues of both government and privately funded research projects. For the governmental task of reviewing petitions related to research misconducts, this committee may replace current administrative appeals commissions which lack expertise in this field.

The Finnish Advisory Board on Research Integrity could be a good benchmark for the new committee. In Finland, parties or individuals dissatisfied with the decision of a research institution, which is responsible for investigating alleged misconduct cases, can request a statement from the Finish Advisory Board. When compiling the statement, the board may request a written response from the parties

involved as well as the investigating institution (Finnish Advisory Board on Research Integrity 2012). It means that the board plays a role in coordinating between the investigating institution and the alleged. Although the board does not judge whether a violation occurs, it acts as "a kind of appeals court without being a court".[10] The proposed committee may play this role, being a coordinator, not a judge.

4. Comparing Three Models

<Table 2> compares the key features of the alternative RIG models discussed so far. The status quo oriented model features: (1) the strengthened coordination among the extant relevant committees and boards and between the administration branch and the judicial branch; and (2) the absence of central governmental body for research integrity affairs. Because the model does not require any legislative amendments nor demand much alterations to the current system, it can be implemented in a relatively short period, and its feasibility is high compared to other two models.

The second model imitates the U.S. governance structure where funding agencies play pivotal roles for research integrity issues. In particular, this model expands the roles of NRF and NIBP, under the supervision of an extant governmental authority such as the presidential office, over research ethics focusing on basic scientific and biomedical research only. The model delegates greater responsibility to these institutions, which may result in excessive authorities on them. Due to its basis on the institutions and traditions of the U.S., this model may not fit into the Korean legal and institutional environment making its feasibility

10) Varantola, K. (2011), "Good Scientific Practice and Code of Conduct in Finland. Procedures for Handling Misconduct and Alleged Fraud in Science," http://www.tenk.fi/sites/tenk.fi/files/Good%20scientific%20practice%20and%20code%20of%20conduct%20in%20Finland_Varantola.pdf. (accessed on August 10, 2015)

relatively low compared to other two models.

<Table 2> Comparison of alternative models

	Maintenance of Status Quo Alternative	Alternatives Involving Regulatory Reforms	
		Funding Agency-oriented Governance	National Committee-oriented Governance
Governance Structures and Roles	Strengthened coordination among the extant relevant committees and boards and between the administration branch and the judicial branch	Widening the roles of the National Research Foundation of Korea (NRF) and the National Institute for Bio-ethics Policy (NIBP) (Benchmarking the U.S. system)	Integration and substantial expansion of the extant advisory committees into the National Research Integrity Committee under the Ministry of Education (MOE)
Control Tower with Authority	None	Secretary to the President for Education and Science/ NRF and NIBP	National Research Integrity Committee of MOE
Implementation Time Horizon	Short-term	Mid-to long-term	Mid-to long-term
Feasibility	High	Low	Medium
Advantages	No legislative amendments; Improved autonomy of research institutions	Greater responsibility of a research funding agency	Clear assignment of responsibilities (MOE); strong coordination among relevant bodies; comprehensive coverage across all disciplines
Disadvantages	Minimum level of reform to the current system	Excessive roles of funding agencies; limited to basic science and biomedical science; required legislative changes	Resistance of other ministries and research institutions; required legislative changes

The third alternative creates a new government agency, namely the National Research Integrity Committee, to assume the roles, responsibilities, and authorities over research integrity issues comprehensively. With this model, MOE takes the leadership role in coordination with other ministries. The model offers advantages of clear assignment of responsibilities and comprehensive coverage across all scientific and scholarly disciplines. On the other hand, it involves legislative changes which may require a longer time to have the governance structure in its full effect. Further, the centralization of authorities to MOE may create unwanted conflicts with other ministries. This alternative may be subject to criticism for the government's excessive intervention in research activities. For these reasons, its feasibility is evaluated to be medium.

VI. Concluding Remarks

This study analyzed institutions related to research ethics in Korea and examined the roles and responsibilities of major actors that constitute the Korean RIG and the relationships among them. To establish more effective RIG, it proposed three alternatives based on the qualitative data collected from interviews with experts in research ethics and case studies on various countries. A nation-wide governance system is a complicated creature that involves numerous stakeholders with different interests. Korea is now in need of reformative measures since its RIG has suddenly been established without thorough discussion or consistent coordination, responding to a series of unprecedented and unexpected misconduct cases. It is about the right time to bring in a reform with short and long-term plans to nurture more advanced research communities in Korea.

This is the first paper that comprehensively reviews the laws and

institutions which constitute RIG of Korea and recommends alternative models for policy makers. As the countries with more advanced practices of research integrity maintain various RIG structure, Korea may choose the one that best suits its need considering the social norm for public intervention in research activities and the feasibility of legislative reform.

Establishing an effective RIG through legal and regulatory reform is not a sufficient condition to secure research integrity. Nevertheless, in countries like Korea, where RIG at a national level is underdeveloped, legal or regulatory measures to ex-ante prevent and ex-post investigate research misconducts are undoubtedly necessary. However, it should be noted that such "hard" measures relying only on laws against misconduct may not work; bureaucratic control over researchers may lead to unintentional side effects such as concealment of fraud. Therefore, in addition to the enforcement under the regulation-based RIG, the government should seek "soft" measures such as providing research ethics education[11] to future scholars and rewarding good research practices to nurture research environment in which researchers are encouraged, not enforced, to open and discuss their research practices voluntarily within the research community.

11) In their empirical study on research ethics education in Korea, Song, Choi, and Rhee (2010) show that college students had a strong perception on the necessity of ethics education and a strong willingness to attend the class related to research ethics.

| References |

1. Journals and Books

Argyriades, D. (2006). “Good Governance, Professionalism, Ethics and Responsibility.” *International Review of Administrative Sciences*. Vol. 72. No. 2, pp. 155-170.

Boesz, C. (2012). “Developing Research Integrity Structures: Nationally and Internationally.” T. Mayer and N. Steneck (eds.), *Promoting Research Integrity in a Global Environment*. New Jersey: World Scientific, pp. 7-16.

European Science Foundation (2010). *Fostering Research Integrity in Europe*. Strasbourg: IREG Strasbourg.

Finnish Advisory Board on Research Integrity (2012). *Responsible Conduct of Research and Procedures for Handling Allegations of Misconduct in Finland*. Helsinki: TENK.

Kim, J. and K. Park (2013). “Ethical Modernization: Research Misconduct and Research Ethics Reforms in Korea Following the Hwang Affair.” *Science and Engineering Ethics*. Vol. 19. No. 2, pp. 355-380.

Six, F. and A. Lawton (2013). “Towards a Theory of Integrity Systems: a Configurational Approach.” *International Review of Administrative Science*. Vol. 79. No. 4, pp. 639-658.

Song, S., K. Choi, and H. Y. Rhee (2010). “Science and Engineering Major Students’ Perception of Research Ethics and Education.” *KEDI Journal of Educational Policy*. Vol 7. No. 1, pp. 175-205.

2. Others

Han, S. Y. (2011). “The Enactment of the Act on Academic Research Ethics.” Ministry of Education, Science and Technology. (in Korean)

National Science Foundation (2015). “Semiannual Report to Congress.” The Office of Inspector General.

SNU Investigation Committee (2006a). “Final Report on Professor Woo Suk Hwang’s Research Allegations.” Seoul National University. (in Korean)

_____ (2006b). “Supporting Materials on Former Professor Woo Suk Hwang’s Research Misconduct.” Seoul National University. (in Korean)

Anticorruption and Civil Rights Commission (2014). “Act Number 12718: Administrative Appeals Act.” May 28. (in Korean)

Ministry of Culture, Sports and Tourism (2014). “Act Number 12137: Copyright Act.” July 1.

Ministry of Education (2013). “Act Number 11690: Academic Promotion Act.” March 23.

_____ (2014). “Ordinance Number 112: Regulations Handling Academic Support Projects in Humanities and Social Sciences.” August 21.

_____ (2015). “Ordinance Number 153: Guideline to Ensure Research Ethics.” November 3.

_____ (2016). “Act Number 13819: Special Act on the Improvement of Teacher’s Status.” January 27.

Ministry of Health and Welfare (2014). “Act Number 12844: Bioethics and Safety Act.” November 19.

“182 Professors Indicted for Violating Copyright.” *Joongang Daily.* December 16, 2015.

“Top Court Sides with SNU over Hwang’s Firing.” *Joongang Daily.* February 28, 2014.

Appeals Commission for Teachers (2015). “ACT Cases Statistics.” http://www.ace.go.kr. (accessed on October 20, 2015)

Canadian Research Integrity Committee (2009). “The State of Research Integrity and Misconduct Policies in Canada.” http://www.nserc-crsng.gc.ca/_doc/NSERC-CRSNG/ HAL_Report_e.pdf. (accessed on February 22, 2015)

Central Administrative Appeals Commission (2015). “CAAC Cases Statistics.” http://www.simpan.go.kr. (accessed on November 1, 2015)

National Research Foundation of Korea (2015). “Organization Information.” http://www.nrf.re.kr. (accessed on July 17, 2015)

National Science and Technology Council (2015). “NSTC Meeting Agenda.” http://www.nstc.go.kr. (accessed on August 5, 2015)

Varantola, K. (2011). “Good Scientific Practice and Code of Conduct in Finland. Procedures for Handling Misconduct and Alleged Fraud in Science.” http://www.tenk.fi/sites/tenk.fi/files/Good%20scientific%20practice%20and%20code%20of%20conduct%20in%20Finland_Varantola.pdf. (accessed on August 10, 2015)

| **논문투고일** : 2019년 02월 07일 |
| **논문심사일** : 2019년 02월 17일 |
| **게재확정일** : 2019년 03월 11일 |

| 국문초록 |

국내 연구윤리 거버넌스 대안모델 개발에 관한 연구

임은옥
(강남대학교 공공인재학과)
한상연
(경희대학교 행정학과)

본 연구의 목적은 우리나라 연구윤리 거버넌스를 구성하는 주요 행위자인 정부, 연구지원기관, 연구수행기관 및 연구자의 역할과 기능을 재정립하여 효과적인 연구윤리 거버넌스 모형을 제시하는 것이다. 이를 위해 국내 연구윤리 관련 법령 및 지침과 관련 조직의 현황을 분석하고 외국의 관련 사례를 조사하였다. 본 연구에서 제안하는 우리나라 연구윤리 거버넌스의 3가지 대안모델은 (1) 현상유지를 기반으로 기존 연구윤리 관련 국가 및 행정부 위원회 간의 연계성을 강화하는 것, (2) 한국연구재단과 국가생명윤리정책연구원의 기능과 권한을 확대하여 미국식 연구윤리 전담기관 모델을 벤치마킹하는 것, (3) 교육부의 현 연구윤리자문위원회를 국가연구진실성위원회로 승격시키고 역할을 강화하여 연구윤리에 관한 컨트롤타워 역할을 하게 하는 것으로 구성된다. 연구 활동에 대한 공공 개입의 타당성과 입법 개혁을 통한 실현 가능성을 고려하여 이 3가지 모델 중에서 우리나라에 가장 적합한 대안을 선택할 수 있다. 본 연구는 우리나라 연구윤리 관련 법·제도를 종합적으로 검토하여 연구윤리 거버넌스 대안 모델을 제안한 논문으로 외국에 우리나라 연구윤리 거버넌스를 소개한다는 점에서 큰 의의를 지닌다.

▪ 주제어: 연구윤리 거버넌스, 연구윤리, 연구진실성, 연구윤리교육, 국가연구진실성위원회