



## Invisible college in the relationship between the doctoral candidates and their supervisors in Indonesia

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Using social network analysis on 104 doctoral thesis or dissertations of the University of Indonesia and 174 doctoral thesis or dissertations of the Padjadjaran University in the field of communication science, the present research is aimed to explain invisible college which is formed through the relationship of the doctoral candidate and supervisor in thesis or dissertation writing. The authors also use cultural data from dissertation works of graduated doctoral students to see the characteristics of the invisible college. The present study found that there were invisible colleges formed due to several factors namely institutional similarity, research-interest similarity, paradigm similarity and method similarity between doctoral candidates and their supervisors in the thesis or dissertation writing. The present study also found that some invisible colleges have characteristics in that homogeneity or heterogeneity of their study. Other findings also revealed that there was a link between the two institutions.

**Keywords:** Invisible college; Doctoral candidate; Supervisor; Social network analysis; Scientific Communication

### Introduction

Invisible college is a term used to call an intellectual association sharing scientific ideas and common goals among scientists who share a common interest in science studies<sup>1,2,3</sup>. The idea of invisible college is assumed to be the best model of scientific communication that describes the process of scholarly communication that occurs among scientists<sup>4</sup>. Invisible colleges are often associated with the dissemination of information and knowledge in a scientific discipline<sup>5,6</sup>.

Researchers in various fields of science have conducted several invisible college studies. Some of them are research conducted by Richard H Hart in the field of animal husbandry<sup>7</sup>, Tuire & Erno in education<sup>6</sup>, Casey & McMillan in industry<sup>8</sup>, Odilia de Meneses in tourism<sup>9</sup>, Verspagen & Werker in economics<sup>10</sup> and Diaz-Andreu in the field of Archeology<sup>11</sup>. Invisible college research has also been conducted in the field of communication science by Chang & Tai who studied invisible college in the field of mass communication studies<sup>12</sup>, and Hambrick who studied invisible college in the field of sports communication<sup>13</sup>. These studies have a common goal to find invisible colleges by looking at the structure of relationships and interactions that occur among scientists. Furthermore, these studies use bibliometric

technique that focuses on citation behaviour among scientists to reveal the invisible colleges formed in their respective fields of science.

Lievrouw assessed that the invisible college study only tends to test scientist products. Though disclosure of invisible college not only can use bibliometric techniques that see the behaviour of citation, but also several factors make scientists establish relationships such as the same educational background or similarity of views<sup>4</sup>, including socio-economic and cultural factors to consider. Secondly, Lievrouw assessed that the idea of an invisible college is describing the communication process not arising from communication research<sup>4</sup>. Therefore, Lievrouw encourages researchers, especially communication researchers to develop an invisible college study by using other techniques more typically applied in the field.

Furthermore, Pratama conducted invisible college research using educational background data from communication science scientists in Indonesia with the Social Network Analysis method. Pratama's research found that there were invisible colleges because of the ties of educational background and geographical proximity of scientists who studied at the University of Indonesia, the Padjadjaran University, Gadjah Mada University, University of

Mercu Buana, and LSPR College of Communication<sup>14</sup>. On the one hand, Pratama's research followed the advice of Lievrouw to develop an invisible college study with other methods besides bibliometric and also saw several other factors forming invisible colleges, one of which was the similarity of educational background and geographical proximity.

On the other hand, Pratama's research only explained the relationships formed by scientists because of the similarity of educational background or geographical proximity without specifically explaining the fields of communication that make them related as the invisible colleges who carried out scientific communication<sup>14</sup>. Whereas invisible college also involves knowledge diffusion, sharing scientific ideas among scientists who have similar interests in science<sup>1,2,3,5,6</sup>. This gap is an opportunity for researchers because research is needed to be able to answer the challenges of Lievrouw to develop invisible college research without eliminating the basic concept of the invisible college namely the diffusion networks of knowledge among scientists.

Supervision activities, when doctoral candidates establish relationships with their supervisors and co-supervisor in thesis or dissertation writing, are behaviours that can form invisible college. In the activity, it is assumed to occur a process of scientific communication between supervisors and doctoral candidates. This kind of activity will, in turn, affect the work or ideas of the doctoral candidates through the communication process<sup>15</sup>. Therefore, the present research tries to reveal the invisible college using communication or social network analysis toward 104 doctoral thesis or dissertations of the University of Indonesia and 174 doctoral dissertations of the Padjadjaran University in the field of communication science. It tries to explain invisible college which is formed through the relationship of the doctoral candidate and supervisors in thesis or dissertation writing. The authors also use cultural data from thesis or dissertation work of the graduated doctoral students to see the characteristics of the invisible college.

## Review of Literature

### *Scientific communication in Invisible College*

The term "Invisible college in the 17<sup>th</sup> century, precisely in 1640 AD was first used to name ten youths who are not professional scientists but have a good education in the field of science, and they

regularly meet informally. Their encounter then developed in the Royal Society, the oldest English society<sup>5,6,15</sup>. In contrast, Hart said that the term "Invisible college" appears to have been created by the English natural philosopher Robert Boyle, the invisible college became the core of the Royal Society of London founded in 1661 AD<sup>7</sup>.

Crane popularized the term invisible college to define a communication network that links intangible subgroups, each containing some very productive scientists, and some other less productive scientists<sup>16</sup>. In contrast to Crane, Tuire and Erno explaining the invisible college is used for studying researchers in similar fields of science and mutual contact with one another. The term invisible college has been characterized by the diffusion or dissemination of information in knowledge, although the definition of the invisible college itself is almost as much as the researchers who use it<sup>6</sup>.

The idea of invisible college is the best model of scientific communication<sup>4</sup>. It means that scientists communicate, collaborate, and or share a particular common interest or purpose within a particular area<sup>17</sup>. Scientific communication is generally characterized by distinctive types of structures and communication processes. The process of communication as any activity or behaviour that facilitates the construction and sharing of meaning among individuals deemed useful or appropriate in certain situations, e.g., research presentations, or research collaborations. Further, the structure of communication is the unit of relationships among individuals associated with their constructive and shared meanings such as research associations, invisible colleges, research groups<sup>18,19</sup>. Informal communication in the invisible college and the specific network with the aim of sharing knowledge and science is called scientific communication<sup>17</sup>.

### *Diffusion of knowledge in Invisible College*

The diffusion of knowledge discusses how ideas and practices can be spread within and between the scientific communities<sup>20</sup>. Different fields of science make the meaning of diffusion also different. Forsman explains regarding communication diffusion can be interpreted as the dissemination, broadcasting, or dissemination of something abstract as knowledge<sup>21</sup>. Likewise, Rogers explains that diffusion is the process of communicating an innovation through a particular channel among members of the social system<sup>22</sup>. The primary process of diffusion is

the exchange of information through the communication of ideas from one individual to another using a communication channel<sup>21,22</sup>.

Learning about the diffusion of knowledge, Crane explains that when more scientists or researchers are interested in a particular field of study, it will grow the membership of an invisible college<sup>16</sup>. Crane also explains that when the idea of the study appears initially, there are still few researchers or scientists interested in the study<sup>16</sup>. However, it will gradually be proven by increasing publications and scientists' confidence in the importance of focusing on new research areas. Crane believes that the invisible college plays an important role and fosters a scientist because the invisible college network allows face-to-face meetings and provides the impetus needed to create research interest in some fields of science<sup>16</sup>.

#### *Invisible college as Communication Network*

The network describes the pattern of relationships formed from the flow of information within a system. This relationship will show a specific pattern that can be seen from the position of each of the circles which make the relationship<sup>23</sup>. Communication network is a method that seeks to analyse, describe and explain the pattern of relationships and communication between two or more individuals as a social network and network structure formed in a system<sup>18,24</sup>.

Monge and Eisenberg state three theoretical viewpoints of communication networks that are relational, positional, and cultural<sup>25</sup>. The relational viewpoint focuses more on the direct or indirect link between members of the network. The positional viewpoint focuses on the pattern of relationships between sets of positions and roles in society and institutions. The cultural point of view focuses on symbols and meanings used to send messages through communication networks<sup>26</sup>.

Given the definition of the invisible college is the intelligent network formed by the linking of the ideas of scientists, the personal relationships between scientists interwoven by a common interest and similar scholarly interests<sup>1,2,6</sup>. The relationships between the scientists both directly (e.g., mentorship, supervisor relation with Ph.D. Candidate, meeting) or indirectly (e.g., citation behaviour, collaboration in writing, reviewers of scientific papers) in the focus of a particular study or specialization will form the knot-nodes of social networks or communications networks. Referring to that explanation, researchers conclude that the invisible college is also a part of the

communication network.

An essential point of invisible college disclosure is that the pattern of relationships and interactions among members of the invisible college is a communication network<sup>27</sup>. Hence, much of the invisible college research in disclosing the existence of invisible colleges, the researchers also use the typical methods of social networking or communication networks such as bibliometric and social or communication network analysis.

#### **Objectives of study**

- To reveal how the invisible college is formed through supervision activities between doctoral candidate and their supervisors in thesis or dissertation writing.
- To see the information flowing in the invisible college formed through the supervisors and doctoral candidates' relationships by looking at cultural data from the titles of thesis or dissertation works of existing doctorates.

#### **Methodology**

The present study is a research of communication or social network by using two data that is relational data and cultural data. It is based on Monge & Contractor that explains the analysis of the structure of communication networks can be located in one of three traditions namely relational, cultural and positional<sup>26</sup>. Relational data are interaction data between supervisor and doctoral candidate in dissertation writing in communication science doctoral program of the University of Indonesia and the Padjadjaran University, which then processed with UCINET and NodeXL software. Cultural data are the titles of dissertation works that have been produced by the doctoral candidate under supervised of their supervisors which are then mapped based on field of studies, methods, or paradigms used in the dissertation research process. The present study uses social network analysis with Unobtrusive Method technique which is collecting data based on the available documentation. Then processed with NodeXL and UCINET to find out the structure of the network that makes up the invisible college by looking at sociogram, network density, centrality degree, centrality closeness, centrality betweenness, groups, and cliques formed within the network that makes up the invisible college.

Document data in this study obtained directly from the administrative division of both institutions and

obtained from the dissertation data in the libraries of both institutions. The collected data documents are 104 Dissertations at the University of Indonesia) and 174 Dissertations at the Padjadjaran University. There are 278 dissertations that also recorded the names of their respective doctoral candidates and supervisors. The researcher noted that there are 278 doctoral candidates and 135 supervisors. The present study also uses content analysis of existing dissertation work to understand the mapping of the filed study, the paradigm and the methods used by the actors in the network (the doctors of communication).

In this study, density measurements were carried out to see the density or cohesiveness of the network, namely the intensity of the connectedness of actors in the network. The density value close to 1 shows perfect value as a network<sup>24,26,28,29</sup>. The results of density measurements in this study will explain the cohesiveness of the doctoral network in communication science through interactions formed from the supervision process. Centrality degree measurement is carried out to see actors who occupy a central position in the network based on the intensity of interactions that are interwoven with other actors in the network<sup>24,26,29</sup>. The results of the centrality degree measurements in this study will explain the dominant actors connected to other actors. Centrality betweenness measurement is carried out to see actors who are intermediaries for other actors<sup>25</sup>. This position is considered important because it places the actor in a strategic position as the carrier or distributor of information for other actors. Centrality betweenness measurement in this present study will explain the doctorate of communication science who has the potential to become a bridge or betweenness for other doctor candidate in dissertation supervision activities. The measurement of centrality closeness is carried out to see the proximity of actors in the network<sup>26,29</sup>. The results of this measurement will explain the doctorate of communication science who has the shortest step to connect with all other doctorate in the network.

## Results and discussion

The result of this research is the researcher get the dissertation data from 104 doctoral dissertations from the Year 1993-2017 along with doctorate list and supervisors in thesis or dissertation writing in Communication Science Doctoral Program of University of Indonesia. The Doctoral Program of

Communication Science, University of Indonesia began to stand in 1982, but the lectures are structured newly held in 1993. Also, in the Doctoral Program of Communication Science in the Padjadjaran University, researchers found a complete dissertation of about 174 works of the doctoral dissertation from the Year 2009-2017 along with doctorate list and supervisor. The doctoral program in Communication Science, the Padjadjaran University began to stand in the 1990s, but researchers only get data from the year 2009 upwards. The acquired data then analysed through communication networks using UCINET and NodeXL software and content analysis.

### *Sociogram and density*

The researcher, on figure 1, presented a sociogram of the communication science doctoral networks made with NodeXL software. Based on data obtained from the University of Indonesia and the Padjadjaran University, the node in the network of doctorate and supervisor is 376 nodes with 1502 ties. This sociogram can later explain the density and centrality of actors in the communication science doctoral networks of the University of Indonesia and the Padjadjaran University.

Based on the density analysis using UCINET software, researchers found that the network of communication science doctorate in both institutions showed the density number of 0.011, which means the chances of the relationship among 376 actors in this network is 1.1%. While the average level of relationship that is 3.955, which means every actor can link more than one other actor and on average each actor can contact at least 4 actors in the network. The cohesiveness that occurs in this network is low because the actors in this network are only connected to the supervisor. Therefore, the network is centred on several central actors namely the actor who becomes

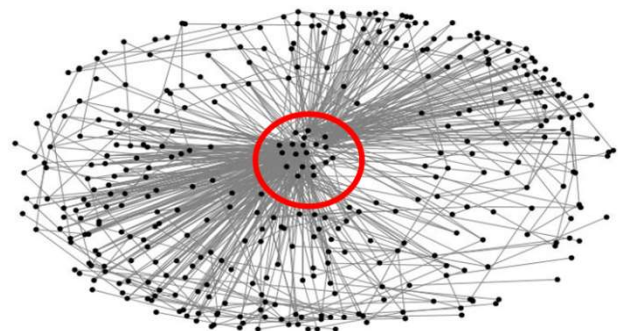


Fig. 1 — Sociogram Global Network of Doctoral Network

the supervisor for the doctoral candidate. The subgroups formed between the supervisor and the doctoral candidate were then identified as invisible colleges of communication science doctorate because these activities were closely related to the scientific communication process among scientists.

**Centrality Degree**

The result of the centrality degree measurement, on Table 1, shows the centrality of some actors through the level of relationship that is owned by the actors in the network and can be regarded as a famous actor. Actors from the Padjadjaran University occupy ranking 1 to 3 because the number of their doctoral candidate are much, so that the intensity of supervisors to establish relationships with doctoral candidates for dissertation writing is higher than the University of Indonesia. The actors in the top positions are the actor with the status of professors such as Deddy Mulyana, Engkus Kuswarno, Nina Syam, Sasa Sendjaja and Mien Hidayat, due to their status as professors making

their chances of being elected as supervisors bigger than other actors. There are only four actors, not professors who are top ranked such as Pinckey Triputra, Eni Maryani, Atwar Bajari and Betty Soemirat. They are actors who already have operative positions as Associate Professor so that it can be a supervisor for doctoral candidates.

**Centrality Betweenness**

The results of the centrality betweenness measurement, on Table 2, show that the top position is occupied by actors who have many relationships with other actors, like Mulyana and Syam. The top positions are also occupied by actors who have been supervisors in both institutions such as Suwardi, Mulyana, Sendjaja, or actors who are studying at the University of Indonesia or the Padjadjaran University then become supervisors at the University of Indonesia or the Padjadjaran University such as Eni Maryani and Dadang Rahmat Hidayat. The centrality of the betweenness shows the strategic position of the actor as it can serve as a bridge for other actors. In fact, actors who occupy strategic positions can play a role in controlling the flow of information within the network.

**Centrality Closeness**

This centrality value, on Table 3, is calculated from the whole step or distance required by the actor to contact or be contacted by other actors in the network. The result of the centrality of closeness, on Table 3, indicates that strong ties actors have short steps to reach other actors such as Mulyana, Suwardi, and Syam. Actors who have relations with actors who have a small closeness value also have short steps to reach other actors such as Dadang who has relations

Table 1 — Centrality Degrees

Actor	Degree
Deddy Mulyana	68
Engkus Kuswarno	54
Nina W Syam	53
Sasa Sendjaja	37
Mien Hidayat	35
Betty Soemirat	35
Soleh Soemirat	34
Harsono Suwardi	31
Ilya Sunarwinadi	29
Pinckey Triputra	26
Atwar Bajari	22
Eni Maryani	20
Billy Sarwono	20
Alwi Dahlan	15
Haryo Martodirdjo	15

Table 2 — Centrality Betweenness

Actor	Betweenness	Attribute
Harsono Suwardi	21640	UI graduate doctor, Supervisor at UI, and once a Supervisor at UNPAD.
Deddy Mulyana	21190	Supervisor at UNPAD and once a Supervisor at UI.
Sasa Sendjaja	13968	Supervisor at UI and once a Supervisor at UNPAD.
Nina W Syam	12340	Supervisor at UNPAD
Dadang Rahmat	12082	Graduated at UNPAD, Supervisor at UNPAD, and supervised by Supervisor at UI
Eni Maryani	11989	Doctorate Graduated from UI, Supervisor at UNPAD.
Engkus Kuswarno	9193	Supervisor at UNPAD
Sholeh Soemirat	5647	Supervisor at UNPAD
Agnita Singedekane	5379	Doctorate graduated from UNPAD, and once supervised by Supervisor UI
Pinckey Triputra	4642	Doctoral graduated from UI, Supervisor at UI.
Betty Soemirat	4173	Supervisor at UNPAD
Billy Sarwono	4142	Doctoral graduated from UI, Supervisor at UI.
Yusuf Hamdan	3916	Graduated at UI, Supervisor at UNPAD, and once supervised by UNPAD Supervisor
Atwar Bajari	3915	Supervisor at UNPAD
Mien Hidayat	3350	Supervisor at UNPAD

with Mulyana. There are also isolated actors in the network as showed on Table 3 because the relationship only covers the actor and does not spread to other actors in the network such as Djajusman, Darwis, and Baco. Based on the all measurement of centrality that have been carried out, the results show that Mulyana is an actor who occupy the top position in three centralities at once, i.e., degree, betweenness, and closeness (Tables1, 2 and 3).

**Invisible college in Doctoral Network of Communication Science**

Researchers found that there were about 15 largest invisible colleges, as shown in figure 2, formed from doctoral candidate relationships with supervisors in thesis or dissertation writing. Invisible college is based on the centrality of the greatest actor who became the

central actor because many of them also became supervisors for doctoral candidates. There were 15 invisible colleges namely Deddy Mulyana’s group, Engkus Kuswarno’s group, Nina W Syam’s group, Sasa Djuarsa’s group, Mien Hidayat’s group, Soleh Soemirat’s group, Betty Soemirat’s group, Harsono Suwardi’s group, Ilya Sunarwinadi’s group, Billy Sarwono’s group, Pinckey Triputra’s group , Atwar Bajari’s group, Eni Maryani’s group, Alwi Dahlan’s group, and Haryo Martodirdjo’s group. Some of these invisible colleges have similarity characteristics of study or paradigm similarities, and the most obvious is the relationship between actors forming an invisible college because of the institutional similarity among actors in the supervisor relations activity.

In addition to the subgroups formed from

Table 3 — The Shortest Step in Centrality Closeness

Actor	Closeness	Attribute
Deddy Mulyana	1083	Supervisor at UNPAD and also in UI
Dadang Rahmat	1138	Doctorate Graduated from UNPAD, Supervisor at UNPAD
Eni Maryani	1157	Doctorate Graduated from UI, Supervisor at UNPAD
Harsono Suwardi	1162	Doctorate UI Graduates, Supervisor at UI
Nina W Syam	1180	Supervisor at UNPAD

The Isolated Actors in Centrality Closeness

Actor	Closeness	Attribute
Djajusman	4106	Supervisor at UI
Darwis	4106	Supervisor at UI
Baco	4105	Doctorate Graduated from UI
Syarief	2483	Supervisor at UNPAD
Huseini	2425	Supervisor at UI

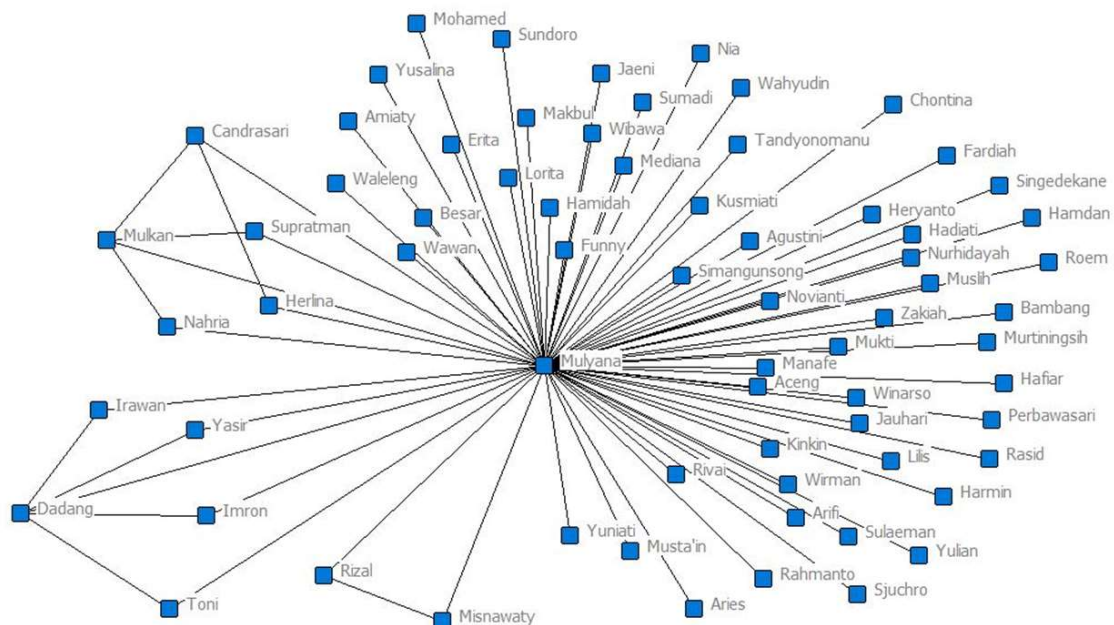


Fig. 2 — Sample of Invisible College, Deddy Mulyana’s Group



supervisor relations activities in dissertation writing that then created the invisible college, there were also found a few cliques in the subgroup formed from this supervisor relations activity. The formation of the cliques is due to the actor who previously performed the dissertation writing guidance with his/her supervisor then after they graduate and then becoming a supervisor for other doctoral candidates. This condition makes them intertwine in a relationship that is connected to each other. Some of these cliques are identified as small invisible colleges that have their characteristics. It is like the clique between Mulyana and Dadang with Imron, Yasir, Irawan, and Toni who tend to study mass communication and culture. The clique between Mulyana and Mulkan with Nahria, Supratman, Candrasari which tends to study mass communication with the constructivist paradigm. The clique between Ilya Sunarwinadi and Alwi Dahlan with Irwansyah, Turnomo, and Tuti who tend in the study of communication networks.

***Invisible college Specialization and Characteristics of Doctorate in Communication Science***

Invisible colleges formed by the supervisor's relationship activities with a doctoral candidate can be seen from the subgroup formation when many actors become supervisors for doctoral candidates. These actors have strong ties that are closely related to the scientific communication process. The relationship between supervisor and doctoral candidates may have influenced the doctoral candidate's work in preparing the dissertation. It can be seen from the invisible college that has its characteristics, as shown in figure 3 above. Although the Invisible college group formed appears to be non-specific in one study, there is a tendency in some studies of communication science. Like the Invisible college group of Sasa Djuarsa Sendjaja, on figure 3, seen that this group tends to study mass communication with a percentage of 67% of all their research interest.

On the one hand, some Invisible colleges look at the tendency or specialization of the study (tend to be homogeneous). On the other hand, some invisible colleges do not appear to be inclined in one field of study, but there is a tendency for invisible colleges to use specific paradigms (tend to be heterogeneous). Like Deddy Mulyana group on figure 4, the study of communication science in his group tended to be heterogeneous but seen the use of the same paradigm of the actors in the group that is the use of constructivist paradigm with 78% of all their paradigm interest. Similarly, the Invisible college group of

Ilya Sunarwinadi who studies the science of communication in this group is also heterogeneous, but they have seen to use of the same paradigm of the actors in the group that is the use of constructivist and critical paradigm.

There are exciting findings in this study that is based on the centrality of thebetweenness, found that the study of mass communication into a study that became a liaison between the invisible college at the University of Indonesia and the Padjadjaran University. It happened when Deddy Mulyana from Padjadjaran University became a supervisor for doctoral candidate of the University of Indonesia, and when Sasa Sendjaja from University of Indonesia became a supervisor for doctoral at Padjadjaran

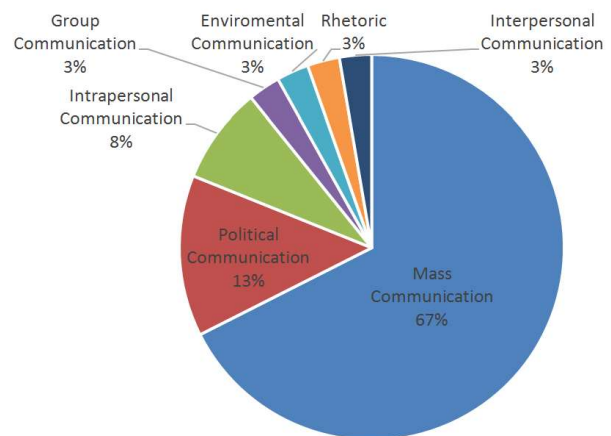


Fig. 3 — Sample Specialization Field of Study, Sasa Djuarsa's Group

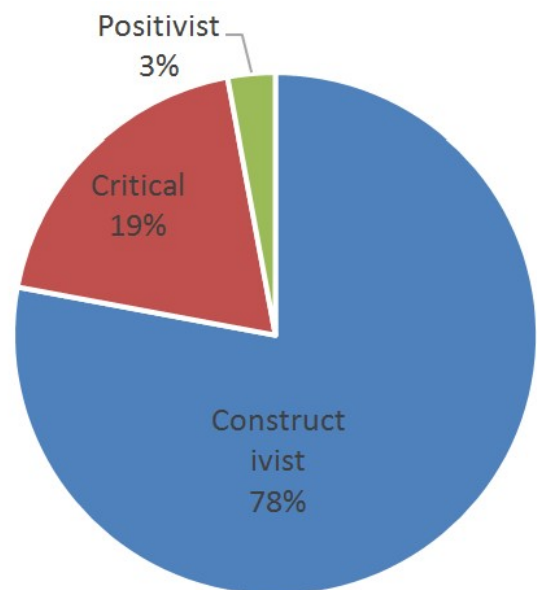


Fig. 4 — Sample of Paradigm Specialization, Deddy Mulyana's Group

University. Further, dissertation theme from doctoral candidate that they guided was mass communication study, resulting in an incision of mass communication studies between the two institutions.

Another finding in this study is the existence of an invisible college formed by academic inbreeding, which is seen from the formation of cliques among the actors. Considered academic inbreeding because the actor after graduating from the doctoral program then became a lecturer and supervisor for a doctoral candidate on campus or college where he took doctoral education. As the definition of academic inbreeding is the appointment of a person, who graduated from a particular institution to work in the institution where he/she was studying<sup>30</sup>.

### Conclusion

Some conclusions from this research are the invisible colleges is seen in the presence of several subgroups that have been formed from the relations of supervisors and doctoral candidates in writing thesis or dissertations. Researchers also found smaller subgroups that formed invisible colleges. The small subgroup has similar studies, paradigms and certain methods among the members of its subgroup. A supervisor can be a meeting point for several different subgroups when many are supervisors for other doctoral candidates.

Invisible colleges formed by the supervisor and doctoral candidates' relationships in thesis or dissertation writing suggest an institutional similarity, paradigm similarity, and common method among invisible college members. Doctoral candidate in one invisible college group may be members of other groups, as the doctoral candidate also has relationships with other supervisors when conducting the thesis or dissertation writing process. The majority of invisible colleges at the University of Indonesia are formed because of the specialization of the field study. Unlike the Padjadjaran University, the majority of invisible college characteristics are formed by the centrality of actors, paradigm similarity, methods similarity with heterogenous field study. The homogeneity and heterogeneity of existing studies in both institutions are influenced by the number of doctoral students completing a dissertation with their supervisors. It can also explain the dominance of studies, paradigms, and methods used in both institutions.

Invisible college is also formed through the process

of academic inbreeding. It is seen from several doctoral candidates who graduated from university and then taught at the institution where they were studying doctoral, and together with their previous supervisors to become supervisors for the next doctoral candidate. There is an invisible college relation established between institutions, this is evidenced through the process of supervising the dissertation (Doctorate supervision relationship) between institutions. It was revealed that the study of mass communication became a link and research interest between two institutions in supervision activities.

The present study focuses on two universities, the University of Indonesia and Universitas Padjadjaran as the organizer of doctoral education of communication science in Indonesia. It cannot be used to generalize the overall structure of the communication science communication network in Indonesia. However, the results of this study can be used to establish an initial assumption regarding the communication science doctoral network as an invisible college and the medium of knowledge dissemination in Indonesia.

It also uses only data obtained from documents belonging to the University of Indonesia and Padjadjaran University related to the database of supervisors and doctoral candidates in thesis or dissertation writing among the doctoral candidate of communication science. The dissertation data obtained from the two universities are different. Doctoral dissertation data of communication science at the University of Indonesia obtained completely from the early years of doctoral education. Communication Studies University of Indonesia was established from 1993-2017, while from the doctoral program of communication science at Padjadjaran University, researchers can only reach the dissertation data from 2009-2017 not from the early years of the Padjadjaran University founded the Doctoral Communication Science Program.

Differences in dissertation data occur due to the limitations of researchers to reach the existing dissertation data in Padjadjaran University. Researchers did not get dissertation data that existed under 2009. Researchers have carried out an exploration in the library of Faculty, and it is not found. Researchers also tried to find a dissertation in the Central Library of the Padjadjaran University (CISRA) also did not get the dissertation data needed.



Researchers have also tried to ask librarians at Padjadjaran University, and officers at the Faculty of Communication Sciences Padjadjaran University but no one knows. Nevertheless, the results of research data remain presented as is by the researchers without having to equate the distance of the year between the two universities to illustrate the fact that occurred in the field naturally. This is done to keep the communication network structures and invisible college groups formed with existing data, and to let the data flow reveal its uniqueness as a finding for researchers in this study.

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