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SCIENCE JOURNALISM WITHIN THE FRAMEWORK OF MEDIA RICHNESS THEORY

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ABSTRACT

This study investigates the nature of the relationship between science journalism and the Theory of Media Richness by introducing a theoretical framework that suggests a model for the parts of the richness and their scientific degree, in which it allows the user to employ it in order to provide the scientific medium with exceptionally adequate content on the publication platforms, social media, journals and such. It serves the role of the scientific media message and also responds to the demands of the people who want this specialized journalism, which is deeply connected with human existence.

Introduction

Scientific journalism is of particular importance in the field of journalism, as it serves as a link between research and society, as well as between scientists and the general public, by simplifying and clarifying various science fields in a journalistic style that is compatible with all individual cultural and cognitive levels, as well as its role in them.Furthermore, this sort of journalism is critical for society members to accept and strengthen their faith in anything new through greater knowledge, scientific materials, and content that explore and directly impact issues and themes that touch their everyday lives.

The richness theory is regarded as a modern theory that emphasizes the criteria for selecting media based on their level of information richness, and it is one of the theories that connects the general public's demand for and use of media to the rich elements of media that effectively contribute to the clarification and interpretation of events and questions.Since science journalism, especially given the digital media environment in which there are a lot of means that have an enormous effect on the general public, is a type of journalism with content requiring access to elements of richness which attract and convince audiences to the communication message, there are relations between richness theories. Then richer and more engaging digital media than conventional media are available.The study covers two topics: one addresses the issue's methodological processes, their relevance, and their goal, and the other addresses the idea and domains of scientific journalism; the other emphasizes the notion of media wealth and the most prevalent theoretical assumptions.

Section One: Methodology

1.1. Research Problem

The research problem is stated as follows in the form of a major question: (How does the link between specialist scientific journalism and the media richness theory work?) , and it is from this question that other questions arise:

1. What is the relationship between scientific journalism and the media richness theory?
2. What are the elements of richness that can be included in the topics of scientific journalism?
3. What is the degree of richness in the elements that could be included in the topics of scientific journalism?

1.2. Study Significance

The value of the research can be seen in its issues, particularly in the domain of richness theory and its facets, as well as the relationship between it and scientific journalism, which contributes to the scientific legacy and literature. In terms of practical utility, it looks to give a model for disseminating scientific themes and contents in news and electronic newspapers, so increasing the efficacy of these materials as well as the rates at which they are viewed and analysed.

1.3. Aims of the Study

The study aims at:

1. Explaining the type of the relationship between science journalism and media richness theory.
2. Understanding the aspects of richness in which enables it to be used in science journalism.
3. Identifying the amount of richness within every aspect of it that can be used in the science journalism literature.

1.4. Type of the Study

This study examines the nature of the relationship between two or more variables with the goal of describing the characteristics of a specific phenomenon. It all starts

with basic inquiries or hypotheses. The researcher gathers facts and information in order to analyze or evaluate (Al-Wadi and al-Zoubi, 2011, p. 34).

Section Two: The First Topic

.Science Journalism: Definitions, Significance and Areas

1.1. Science Journalism

Scientific journalism, a subset of specialized journalism, is a symbol of media and journalistic activity in the sciences and in all subjects relating to daily human life and society's scientific and technical growth. The communication initiatives seek to educate the public about scientific issues, provide accurate news, and provide reliable information" (Hussain, 1996, p. 21).

Someone may claim that it is the role of journalism to "collect, write, and formulate scientific knowledge in a plain manner" since it is "related to information, news, and issues that are more intricate in nature" (Sedky, 2009, p. 16) It is a newspaper that "provides information to the general public and publishes products that help to raise the culture and value of science in society through scientific news, magazines, radio and television broadcasts, and websites" (Al Kaffari, 2009, p. 51).

Scientific journalism is a major branch of media and journalism, which brings together two major groups the general public and scholars, by making the use of journalistic methods and arts simpler (Al-Shammari and Al-Saraj, 2018, p. 440). It therefore symbolizes "the activity of gathering and presenting scientific knowledge in ways that a non-specialist audience can understands" (Shehab and Haddad, 2020, p. 4).

Some feel that "the scientific press is focused on the scientific achievements and discoveries, new technologies, inquiries by scientists and researchers, and the challenges to the situation and sheds light on the strategies and methods used to solve societal problems by researchers and scientists" (Angler, 2017, p. 3). This type of journalism is heavily dependent on specialists who possess scientific experience, since they are better positioned to provide journalists with important information that revolutionizes the topic discussed by the scientific press from which the journalist provides the public with simple and unambiguous manner (Patel, 2019, p. 1774).

Scientific journalism is not the only medium or advertising tool for the scientific product, scientists or research centers, since the scientific press is not satisfied with the transfer of scientific data, but is also intended to raise and present scientific questions as much as possible in a purpose-based manner (Al-Sir, 2009, p. 14).The following can be highlighted as the major contrasts between academic and scientific journalism (Ramadan, 2015, p. 76):

1. For a broader or specialized public, the language of scientific journalism is easy, while, the academic journalism uses scientific language more for it is directed to more specific and specialized audience.
2. Scientific media content is displayed on several media (print, audio, video and digital), while scholarly content is provided in scientific publications, most of which are referred to as reference material

3. Research findings and results, outcomes from experiments, labs, scientific journals and academic papers emanate from the Scientific Press, whereas research and studies are responsible for academic journalism.

Based on the definitions above, science journalism can be defined as a journalism devoted to the different fields of science in society, to its scientific issues, to monitoring all scientific developments, new developments and inventions, to results, solutions and risks, and to their effects in an accurate and thorough way, and to some degree of objectiveness, in simple reporter styles and through different media outlets.

1.2. Science Journalism Significance

The importance of the scientific press in the dissemination of science culture and the simplicity of science is obvious, and developed nations promote science as an objective through which they aspire for success and development, as well as promoting the concept of science as a culture in various media. Countries are interested in scientific media information in the form of print, audio, video, and even digital media to increase individual scientific understanding (Salama, 2014).Science journalism is one of the areas of journalism and media which cannot be ignored or excluded. It is a press concerned with cosmic, scientific, technological or health issues, which have created the need for society to engage in scientific communication with scientific people via the media, and is important to the distribution of the knowledge of science. This newspaper is capable of educating the public and employs scientific research and achievement in the management of life affairs (Ramadan, 2020, p. 2934).

Moreover, the value of scientific journalism is thought to be three-dimensional, as follows:

- The first dimension: gives the person participatory information to develop ideas and decide on scientific matters.
- The second dimension: the knowledge acquired from the content of the science press makes it possible for the public to understand science as an institution and includes how scientists carry out experiments and research, as well as their role in societal decision-making with scientific institutions and influence policy and economic policy.
- The third dimension: the ethical component, or the moral understanding and explanation of scientific topics, in order to avoid conflicts between prevailing values and traditions, such as stem cell research and sex determination.

1.3. Science Journalism Areas and Subjects

Science journalism clarifies scientific information, however a reporter's subject about the severity of the earthquake and the extent of the damage caused to scientific journalism and its issues in a certain city cannot be included. since the tie between science and that particular genre of journalism does not imply forsaking the fundamental norms of journalistic writing. Good themes in mainstream journalism have influential characteristics, a beginning, a complexity and a result.The scientific journalism, therefore, informs the general population on scientific discoveries and advancements in a journalistic way, such that it may be a virus, a black-hole, a planet, or a contemporary technological technology the main character of the science journalism, rather than a head of State or a businessman. Based on the narrative and

on the above, the primary subjects in the science journalism can be described as the following (Shehab and Haddad, 2020, p. 4):

1. Results of research and scientific studies.
2. Abstracts of scientific papers and articles.
3. Discussions that occur within seminars and scientific forums.
4. Patents of inventions and new discoveries, and the general benefit they provide to society.
5. The history of science or science in general, its development, its future, and the challenges it faces.
6. Topics in which science overlaps with other fields, such as education, work, and societal security.

The study contributes to the following additional fields of science journalism:

1. Medicine & health, medical discoveries news, health care, preventative medicine, food and other human health related issues at all age levels, from children to older people.
2. Engineering and related industries, including building and engineering development, transport and communication advancements and the production of appliances, equipment and machinery.
3. Environment and the climate, the impact of the Arctic's melting and climate change threats and scientific remedies to the global warming and the deep seas and wild life.
4. Planes, space, spacecraft, planets and galaxies, moons and stars, and astronomical phenomena.
5. The Internet and technological development, new applications, satellites, digital and interactive communication.

Several recent surveys analyzing the scientific press content (traditional and digital) showed that newspapers and websites, despite the presence of other areas no less significant than them, receive the attention of journalism and technology due to their close association with human beings, such as the environment and natural phenomena. Slightly less than medical and technological (Al Qiffary et al., 2010, p. 41-42).In our perspective, this produces a feeling of the existence, in selecting issues or areas which shed light on, of issues or hurdles facing scientific journalism. Based on this, the public interests are those who regulate the character of science subjects that are published or broadcast in a media and, since they are unending, they may, among these interests, be utilized as components of suspense to the scientific content (Sharaf, 2003, p. 83):

1. Adventure narratives that are abundant in science history, since most scientific findings are just an adventure carried out by one or more persons, which frequently fascinates readers and users.
2. What is the forecasting of future scientific outcomes or what anticipates new findings and inventions?
3. The public's tendencies to focus on wealth and what emphasizes the rise in profits and financial revenue.
4. Fear of catastrophes, natural phenomena, climate changes and other cosmic events which require explanation and scientific explanation.

5. The desire for a longer time of time and living, as the urge to live automates it for all subjects or studies that are directed in that direction, to pay attention.

Section Two: The Second Topic

Media Richness Theory: Concept, Obligations, and Values

1.1. Media Richness Theory Concept

For the needs of scientific research, the researcher must identify and define the notion of the theory of wealth by referring to Arabic and foreign references to explain the meaning of the word and by referring to their roots in language dictionaries and dictionaries. The term "wealth" is a source of verbs in the Arabic dictionaries, meaning plenty, plenty and goodness (Dar Al-Mashreq, 1986, p. 305), and signifies that there are many things, or that it is an adjective to make things pleasant and powerful (Oxford University Press, 2013).

The richness theory is idiomatically referred to as 'the capacities, which communication can provide, to resolve any ambiguity or confusion and to provide different and different interpretations, analysis and understanding of the user in order to study, in accordance with the degree of information wealth, the criteria for the choice between media and technology.' (Daft, 1984, p. 191).The richness theory is an interactive theory of two-way communication. The less ambiguities in the media and the communicative substance of the media are, the more effective and effective the communication will be (Shafiq, 2014, p. 112-113). The idea of wealth theory therefore is based on a proportional (linear) relationship, the greater its value, the larger it's wealth of information and the achievement of its communication objectives. The more information it provides, the more information it provides, the more information is available, the more information is available and the goal it receives has been reached.The richness theory suggests that uncertainty is linked to lack of knowledge and therefore the rich media source must be able, by their qualities, instruments and capacities, to deliver enough information with clarity and interpretation of the material clearly (Saeed, Yang, &Sinnappan, 2008, p. 852). The theory of wealth therefore posits that people who know about the nature of communications means and users in the communication process have a tendency to pick media whose richness corresponds to the goals and purposes of the entire communication process. Reduction in the quality of results (Kock, 2005, p. 117).

Three aspects were found based on wealth theory (Zahara, n.d.):

1. Information is conveyed through symbolic and verbal systems of communication used to describe and explain events. The duty of information exchange is one of the fundamental duties that helps members of society to comprehend their surroundings and to formulate thoughts on all the issues in that environment.
2. The social system is an extremely complicated one, with many ambiguous and incomprehensible problems, and many comparable and interlinked circumstances, and in order to overcome this ambiguity, it is necessary to design and design processes and ways to deal with information.
3. Partnership is the most essential feature of the information system as members of any institution or institution attempt to achieve a shared system of meanings and beliefs on the prevailing issues within that institution's environment, because access

to that system helps to take decisions, and highlights in this context the role of the information system in eliminating ambiguity and overcome.

Consequently, it is acceptable with the explications given about the notion of the theory of wealth, as the degree of wealth is assessed by the availability and effectiveness of interactive features to remove any ambiguity around the message or journalistic content and by any means whatsoever. The media have an enormous power to clarify events and to explain problems, making them superior to other methods of communication with a low level of wealth.

1.2. Media Richness Theory Obligations

The obligations can be summarized as the following:

1. There is a vast quantity of public material available in the media and in communication media that overcomes ambiguity and gives the audience that is exposed to these contents through these means a maximum degree of clarity (Palvia, Pinjani, Cannoy, & Jacks, 2011, p. 659).
2. In identifying a high to a low degree of media wealth, four essential criteria exist (Dennis & Kinney, 1998, p. 257-258):

a. The medium's capacity to convey numerous signals, meaning the medium's capacity to send both spoken and nonverbal symbols.

b. Audience response rates or feedback speed (feedback immediacy), and also interactivity.

c. Varietal linguistics or natural use of the language by the medium; that is, the media audience learns the language and content of the messages sent by the medium.

d. The focus on the medium's personal ability to speak to members of the public in a personal way, which means to transmit any message to a particular individual, and the focus also implies that sentiments and feelings may be communicated via medium.

Furthermore in 2001, a researcher at the California State University, San Bernardino was able, as indicated in the table below (Newberry 2001, p. 4), to construct additional criteria and elements for assessment of media richness on a triple scale with assessment points:

Table 1. Shows the scale of richness assessment

Scale / Degree	**High 3 points**	**Medium 2 points**	**Low / Weak 1 point**
Feedback	Face-to-face calling, conferencing and video calling, simultaneous TV and radio, text chatting	-	Email, asynchronous television and radio, asynchronous electronic discussions
Multi cues	Face-to-face calling	Video conferencing	Synchronous and asynchronous radio, text chat, email, asynchronous electronic discussions

Massage tailoring	Face-to-face calling	Video conferencing, simultaneous radio, email	Text chat, asynchronous radio, asynchronous electronic discussions
Emotions	Face-to-face calling	Video conferencing, synchronous radio, asynchronous radio	Text chat, email, asynchronous electronic discussions

One could agree with those previously mentioned in studies which found the highest level of richness in confrontational communication. Communication is subject to ambiguity or doubt, and even reaches the receiver, and that is, for example, on the radio; the receiver does not witness the sender; only does he listen to his voice; therefore, his emotions and non-verbal expressions which are important parts of every message are not realized.Because scientific content is a complex with many details and information, there is an urgent need for the availability of the greatest amount of richness within the media message through the means, whether digital newspapers or websites, or any other means, because any ambiguity prevails in the process. The failure of the communication process and the inability of the media message to fulfill its objectives and functions results from conveying the message to the audience.As a result, individuals in charge of scientific press communication must consider the aspects of the theory of wealth and ensure that they are included and provided in the practical materials. Based on the above, the degree of richness in science journalism themes may be described by the following elements:

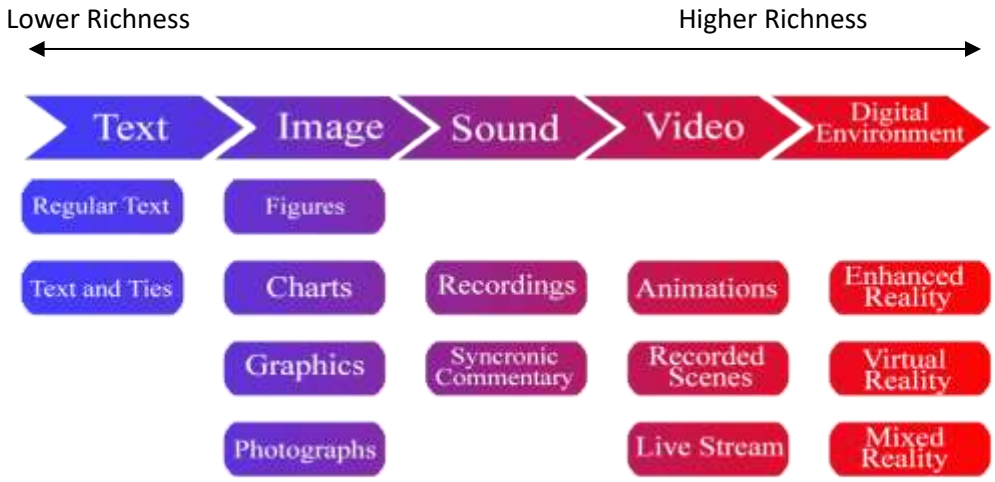

Figure 1. Level of richness within the science journalism content

Conclusion

Recent advancements in journalism and newsroom work have led to evident changes which have led to wealth theory adopting among academics more than ever in studies and research, as if the link between science journalism and wealth theory are to be found. The foundations

and principles of the theory and the materials contained in it must be applied to enrich, enhance scientific journalism, and provide the user or reader the chance to better grasp the information. The user is able to interact and engage with the content as well as other users. On this basis the researchers recommend that the elements in the above figure must be incorporated into newsrooms, especially in Arab media institutions, and priority given to elements, such as video clips, live broadcasts as well as the built-in environment with its increased reality as well as virtual or mixed realities.The richness theory confirms that confronting the recipient can achieve the highest levels of wealth, as we agree, as it is unavoidable for the recipient to receive the message; today, in digital media, wealth can be achieved in the highest degree in real time by means of the media message – science or science.The promptness offered by the new communications method, which is the Internet, appears on real-time video interviews, live audio and video transmissions or enter an artificial virtual world, in which for real persons it is nearly real, with real circumstances and events, when the user receiving the message reaches the highest level of interaction.The research thus recommends that scientific journalism in the sphere of digital media be given greater prominence and provided with all new interactive features which would make science, scientific knowledge and space enough for the user as much as possible simpler.

References

[1] Ahmed, E. M. H. (2019). The richness of the image and its implications in children's electronic magazines and websites and its role in enabling deaf children to acquire some spatial concepts. The Egyptian Journal of Public Opinion Research, 18(1), 119-145.

[2] Al Yamani, T. M. Z. (2016). Users of Syrian electronic newspapers' websites and Facebook pages evaluate the richness of their news services. Scientific Journal of Press Research (8), 543-606.

[3] Al-Qafari A., et al.(2010). Training Bag in the Field of Scientific media. Tunisia: Arab Organization for Education, Culture and Science.

[4] Al-Qafari, A.(2009). Scientific Media in the Saudi Press. Riyadh: King Abdulaziz City for Science and Technology.

[5] Al-Shamri S. J., and Al-Saraj Sh. K.(2018). Media and specialized media. Al-Ain: University Book House.

[6] Al-Sir, H. T. (2009). Scientific media in Sudan: the absent obligation. Khartoum: Sudan Currency Printing Company.

[7] Al-Wadi M. H. and Al-Zoubi A. F.(2011). Scientific research methods: an applied methodological approach. Amman: Dar Al-Mahraj for Publishing and Distribution.

[8] Angler, M. W. (2017). Science Journalism: An Introduction. New York: Routledge.

[9] Bidin, R., Tamam, E., & Ahmed, S. H. (2011). E-mail Use and Usefulness: The Effect of Media Richness and Social Influences. The Public Administration and Social Policies Review, 2(7), 81-94.

[10] Big Levin. (December 28, 2016). 6 free tools for journalists to create interactive maps. Retrieved from IJNet: http://bit.ly/3pZeZKD

[11] Carlson, J. R., & Zmud, R. W. (1999). Channel Expansion Theory and the Experiential Nature of Media Richness Perceptions. The Academy of Management Journal, 42(2), 153-170.

[12] Daft, R. L., & Lengel, R. H. (1984). Information Richness: A New Approach to Managerial Behavior and Organization Design. Journal of Service Science and Management, 6, 191-233.

[13] Dennis, A. R., & Kinney, S. T. (1998). Testing Media Richness Theory in the New Media: The Effects of Cues, Feedback, and Task Equivocality. Information Systems Research, 9(3), 256-274.

[14] El-Shinnawy, M., & Markus, M. L. (1997). The poverty of media richness theory: explaining people's choice of electronic mail vs. voice mail. International Journal of Human-Computer Studies, 46(4), 443-467.
[15] Gray J., Bonnegro L., and Chambers L. (2015). Data Journalism: How we extract news from the piles of numbers and information on the Internet. Beirut: Arab House of Sciences.
[16] Hussain, S. M. (1996). Media and communication with the masses and public opinion. Cairo: The world of books.
[17] Kock, N. (2005). Media Richness or Media Naturalness? The Evolution of Our Biological Communication Apparatus and Its Influence on Our Behavior Toward E-Communication Tools. IEEE Transactions on Professional Communication, 48(2), 117-130.
[18] Lodhia, S. K. (2004). Corporate Environmental Reporting Media: A Case for the World Wide Web. Retrieved from eScholarship: https://escholarship.org/uc/item/20d3x61r
[19] Newberry, B. W. (2001). Raising Student Social Presence in Online Classes. Proceedings of WebNet 2001 - World Conference on the WWW and Internet (pp. 905-910). Florida: AACE, 2001.
[20] Orient House. (1986). Alphabetical locket (version 5). Beirut: Oriental Library.
[21] Oxford University Press. (2013). Oxford English Mini Dictionary (8 ed.). (C. Buxton, Ed.) Oxford: Oxford University Press.
[22] Palvia, P., Pinjani, P., Cannoy, S., & Jacks, T. (2011). Contextual Constraints in Media Choice: Beyond Information Richness. Decision Support Systems, 51(3), 657-670.
[23] Patel, B. (2019). Science Journalism. Current Science, 1774-1775.
[24] Qin, J., Zhou, Y., Reid, E., & Lai, G. (2006). Unraveling International Terrorist Groups' Exploitation of the Web: Technical Sophistication, Media Richness, and Web Interactivity. Intelligence and Security Informatics, International Workshop (pp. 4-15). Singapore: WISI 2006.
[25] Ramadan, A. A. (2015). Scientific and technological affairs in news sites: a study of the content, the communicator and the public. Cairo: Master Thesis, unpublished, Department of Journalism / Faculty of Mass Communication / Cairo University.
[26] Ramadan. A. A. (2020). The role of social networks in promoting scientific journalism. Journal of Media Research, 2931-2972.
[27] Sadiq, A. M. (2005). Traditional and new applications of Arab journalism on the Internet. Proceedings of the Internet Journalism Conference in the Arab World: Reality and Challenges (Pages 1-25). Sharjah: College of Communication / University of Sharjah.
[28] Saeed, N., Yang, Y., & Sinnappan, S. (2008). Media richness and user acceptance of Second Life. ascilite Melbourne 2008 (pp. 851-860). Melbourne: Proceedings ascilite Melbourne 2008.
[29] Salama, S. (June 7, 2014). Scientific Media: The Arabs are oppressed... Will the Dubai Media Forum do him justice? . Retrieved from Elaph: https://elaph.com/Web/opinion/2014/6/911355.html
[30] Sedky, H. (2009). Scientific journalism: between theory and practice. Cairo: Academic Library.
[31] Shafiq, H.(2014). Media theories and their applications in studies of new media and social networking sites. Cairo: Dar Fikr wa Fann.
[32] Sharaf, A.(2003). Specialized Press and Knowledge Unit. Cairo: The world of books.
[33] Shihab A., and Haddad M. (2020). Handbook of Science Journalism. Doha: Al Jazeera Media Institute.
[34] Zahara, E. (n.d.). Media Richness Theory. Retrieved from Scribd: https://www.scribd.com/document/18052269/media-richness-theory