
지식센터로서의 공공도서관 분석 프레임워크

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Analysis Framework of Public Library as Knowledge Center

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요 약 최근 정보통신기술의 발전은 공공도서관의 정체성을 모호하게 만들고 있다. 또한 지역사회의 공공도서관을 지식생성관점에서 연구한 문헌은 거의 존재하지 않는 상황이다. 본 연구에서는 지역공공도서관을 전통적인 도서대출 기능을 수행하는 주체로부터, 지식과 사회자본을 생성하는 주체라는 새로운 관점에서 바라볼 수 있음을 보이고자 한다. 이를 위해서 이 논문은 지식관리와 지식도시 개념을 바탕으로 공공도서관을 분석하는 분석틀을 제시한다. 이 분석틀의 타당성을 검토하기 위하여 뉴저지 주 리지우드 도서관을 하나의 사례로 분석한다.

주제어 : 공공도서관, 지식생성프로세스, 사회적 자본, 지식도시, 지식관리

Abstract The recent advance of information and communication technologies has made the identity of public libraries ambiguous. Few literatures have dealt with a local community public library from knowledge creation perspective. In this article we extend the applicability of the concepts such as knowledge management and knowledge city to local public libraries whose major role needs to change from the traditional book rental to knowledge and social capital creating entity. Based on the concepts, we propose a framework for analyzing the public library as a center of knowledge creation. Using the framework, we analyze the Ridgewood Public Library in New Jersey to test the validity of the framework.

Key Words : Public Library, Knowledge Creation Process, Social Capital, Knowledge City, Knowledge Management

1. Introduction

The sustainability of a community can be defined as a town where the viability of economic, cultural, educational, and civic conditions is consistent in the future ahead so that the community survives for a long time. We live in a period where only uncertainty is certain. Strong community social capital and knowledge resources are the vital sources of the survival and sustainable growth. Traditionally a local public library has been considered as a horsepower of community knowledge. Thus it is natural for us to believe that a local public library plays an important role for

achieving the sustainability.

A local public library has served its community residents for long time as a major source of information diffusion through analog type of book and learning center. Since digital contents and the Internet and information and communication technology (ICT) have penetrated into our daily lives, information search is extended to a global scale and the contents delivery becomes an instant phenomenon, which reduced the need to visit the local library that had been available only there. Moreover, the escalating costs of managing the library threaten the traditional mission of libraries to create and sustain large, self-sufficient collections

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for its patrons. Consequently the budget cuts in public libraries result in closures and downsizing, making the public good eroded [14]. Moreover, the younger generation tends to spend more time at the cyber space for information absorption and social networking. The substantial causes of the crisis in Korea are the gradual change of the library concept as life time learning center, privatization or outsourcing of some of the library functions such as indexing and operations [18]. This is a vicious cycle.

Local community can be viewed as a pool of social capital which is built from the structure of community social network and the relationships among the members as well as intellectual capital of individuals. Social capital is the lubricant of life in the community and intellectual capital is an indispensable factor for determining the competitiveness and sustainability of the community as in other private organizations. If the public library has the capacity to mobilize both social and intellectual capital, a local public library can play a major role for contributing to the sustainability of a local community. Once its role of a public library as a center for enhancing the capital is to be recognized more by the community, the residents will try to participate in the building of the capital, providing its residents with more value. This is a virtuous cycle.

From these contrasting views, we propose a new perspective which is derived from such theoretical concepts as knowledge management from organizational management and knowledge city from public policy which, we believe, are conducive to curb the vicious cycle, while promoting the virtuous cycle.

By embracing the new perspective we hope that we can depart the discussion of the successful public library management from the traditional and passive to the prospective and proactive perspective.

The perspective proposed in this paper can be used in 1) the evaluation of the public libraries from the knowledge creation aspect, thus enabling the library management to diagnose their capabilities in that direction, and 2) the derivation of their strategic posture

to prepare the future, drastically moving away from the traditional view of the roles of public libraries. By doing so, the public library can redefine itself and expand its role from current library operator to facilitator of knowledge creating community.

This paper is organized as follows: In section 2 we review previous literature, especially for evaluation methods for public libraries. We argue that those methods are based on a centralized exchange model. As an alternative to the centralized model, in section 3 we view a public library as a knowledge center, using theoretical backgrounds from social capital and knowledge management. In addition, we propose our framework for the decentralized knowledge center, which can be used for the evaluation of a public library to support the sustainability of community. In section 4, as an application of the framework, we analyze a public library, Ridgewood Public Library in New Jersey, as a sample case and recommend possible initiatives for the future. Concluding remarks are followed in section 5.

2. Literature Review

In this section we review the existing library evaluation methods that we used to define what the success factors of the public libraries are.

From the traditional perspective, library operation requires the streamlined input of materials, labors, and facilities. As with any organization, library operations can be viewed as input-process-output. Among the three steps, input and output are visible, but process stage is not easy to grasp the details from the outside. From this perspective, an efficiently operated library tends to consume less input, compared with inefficient libraries, to attain a certain output goal.

For a quantitative analysis of public libraries for measuring and comparing the relative operation efficiency, the Data Envelope Analysis (DEA) techniques are frequently used. The strength of the technique is claimed that we can use multi-variables

for input and output, unlike other statistical analysis techniques. For example, Kim [5] used the technique to compare 21 public libraries in Seoul, Korea. The input variables employed were the total number of books, the total number of serials, and the annual increase of books, while the output variables were the total number of books borrowed and the number of patrons who borrowed the books and serials. She also conducted a similar research extending the coverage of the libraries into the nation, 102 libraries in 6 metropolitan cities [5].

As we can see, the DEA technique is generally limited to operation and economic side of the library evaluation [6]. Moreover, the selection of input and output variables for the study is at the discretion of researchers.

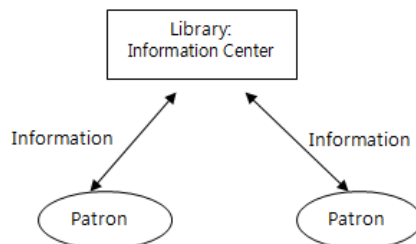
Unlike DEA which emphasizes the efficiency of public libraries, the Balance Scorecards (BSC) technique can encompass the effectiveness and service quality of public libraries. Since the metrics for performance evaluation are derived from the perspectives of all stakeholders of the organization, it is called balanced. Regardless of the characteristics of the organization, the indicators are grouped into four such as customers, finances, internal processes, and future growth [4]. In the library settings, Poll [15] identifies the customer related indicators such as the percentage of the active patrons versus the population, satisfaction level, the usage rate of the patrons, the rate of immediate availability upon request, and so on. The financial indicators are to measure the function of the library in cost effective ways and they include the cost of the library per patron of the community residents, the acquisition expenditure compared to staff costs, and the percentage of staff costs. For internal processes, the indicators are the time required to process acquisition of a book or media product, the number of steps involved in providing a service to patrons, and the number of acquisitions per staff a year. For future growth, such indicators as the percentage of current expenditure for ICT and the number of training hours per staff can be included.

The importance of the techniques, unlike DEA or BSC, comes from the fact that it can serve to generate strategies by seriously considering the environment. In particular, the digitalized environment in public libraries of Korea is identified as the main threat in [9]. However, the theoretical implications from the previous research are contingent, meaning that the result depends on specific organization in study and the generalizability of the results is limited.

Overall, these methods are based on the transaction model. We adopt a metaphor to name the model from Amazon.com as in Figure 1, where all the transactions are processed at the central server.

As in Amazon.com, upon request only information travels between the library, located at the center, and a patron. Any conspicuous linkage between patrons does not exist. In general, the central entity is highly overloaded since it has to deal with all the transactions of information and products at the single point.

The reviewed methods are confined to the Amazon model, making the main concern be the efficiency of the central entity and the management of the links between the center and the individual patrons.



[Figure 1] Centralized Exchange Model: Amazon model

3. Community knowledge center

In this section we move our discussion of the public library from Amazon model to a community knowledge center. For the requirements of a public library as a knowledge center, we need to introduce the concepts of knowledge city, where a local public library is partly

responsible for promoting social capital and knowledge management.

3.1 Knowledge City

Recognizing that knowledge has been proved to be crucial resources at both individual and firm's competitiveness and sustainability, city planners began to adopt knowledge paradigm for their city development, a knowledge city (KC). Ergazakis et al. [2] defined KC as

A knowledge city is a city that aims at a knowledge based development, by continuously encouraging the knowledge management (KM) processes. This can be achieved through the continuous interaction between its knowledge agents themselves and at the same time between them and other cities' knowledge agents. The city's appropriate design, ICT networks and infrastructures support these interactions.

Related research on KC is broad. Main theme of KC research can be categorized as follows:

- 1) Knowledge sharing among the entities in a city,
- 2) Efficiency of communication through ICT and policy [2],
- 3) Learning and decision making by citizens [3],
- 4) Knowledge input through volunteering [17], and
- 5) Emphasis of social capital in a city [13].

Public libraries in KC development are touched briefly in the previous research from macro-level or project level, but we believe that without the processes facilitating the knowledge creation, the implementation of the community strategies of KC cannot be operational.

Along with the recent trend of ICT, in a KC, ICT infrastructure is emphasized for connecting members or entities in the community and readily accessing to information required for the community. However, as is noted in [3], there exists a paradox that even though ICT connects people in diverse ways, ICT also made its citizens so disconnected. Also even though we may have immediate access to tons of information, we seem incapable of finding common sense solutions to the problems we face. Thus the role of ICT in a KC is

limited.

Previous literature on KC has not paid much attention to knowledge creation. For example, we note that the definition by Ergazakis et al. [2] is conceptual since the knowledge agent can represent individuals, schools, research centers, and technology parks. Moreover, it deals with the structural relations of entities, not the process itself, mentioning that 'continuous interaction' between the knowledge agents is a sufficient factor for KC. But we believe that the detailed process of interactions needs to be considered. Since some interactions may not be dynamic so that they don't create useful knowledge for the community. We also need to take into account social capital, an important lubricant for effective interactions.

For a city to be knowledge oriented, its citizen needs to be knowledge citizen [3] and the community as a whole needs to be a learning entity. The current model of public library is rooted in individual learning. Individual learning or knowledge itself does not lead to community knowledge that has to be recreated by pooling the knowledge, perspectives and insight of its members [3].

In sum, most of the KC literature deals with the higher level, emphasizing the connectivity among the entities in a city via either social contact or ICT means. However, they didn't consider the details of knowledge creation

3.2 Social Capital

For a KC to be successful, social capital, lubricant of social actions, is detrimental. Social capital is crucial element for the survival and functioning of a community [8].

Social capital can be considered as an asset of a community embedded in the structure of the social network of the community as a whole and the personal relationships among the members of the community. Regarding the structural type of asset, it is claimed that the linkage pattern of the network determines the magnitude of the asset. Important measures of network

structure are connectivity and density. The relationship type of asset is built from the strength and types of particular relationships of members. Trust, norm, obligations, and expectations are important facets of the relational capital. The consequences of social capital can be efficiency in information searching and diffusion, reduction of opportunism, reducing transaction costs, and facilitating learning [8].

Park & Chang [13] investigated the type and scope of social capital that can be formed through public libraries. For the analysis, they used two dimensions such as macro-micro scope and cognition-structure type. While their categorization scheme is useful for evaluating a public library as a producer of social capital, they didn't provide any mechanism to promote social capital in a community.

Following the socio-centric approach, rather than ego-centric, McElroy et al. [7] argued that social capital can be created upon demand, just like knowledge in organizations. They pointed out social capital can be represented by such forms as trust, beliefs, norms, rules, and networks. Claiming that these forms are closely related with knowledge concept, social capital can be managed and created for organizational or societal actions. Along with this line, they defined social capital as "knowledge and organizational resources that enhance the potential for individual and collective action in human social systems".

In dealing with social capital of a community, we not only cover the above mentioned types of social capital but also human capital. Thus for a community to be competitive, the community needs to upgrade the social capital as a whole. By this approach, the community can be more competitive, attract more resources, and be more viable economically.

3.3 Knowledge Management

Since last decade, private organizations have noticed the importance of knowledge for their sustainable competitiveness in the market and introduced

knowledge management systems. Here we briefly review the related concepts and how knowledge management has been dealt with in the public library settings.

Types of knowledge are generally dichotomized as tacit and explicit, depending on the extent to be able to codify [10][11][12]. Since tacit knowledge is built upon long experience-based learning, it is hard to articulate and expensive to diffuse to other people. On the other hand, explicit knowledge can be easily stored and shared using ICT. By deepening the meaning of each knowledge type and transforming into other types, organizations are able to apply knowledge resources much more readily for innovation and problem solving. Nonaka [10] recognized the importance of knowledge creating capability and proposed an integrative model of knowledge creating process.

In the model, four processes such as socialization, externalization, combination, and internalization (SECI) are defined.

Existing research of KM in the library environment touches the subject of KM superficially and in vague terms, regarding the library as an entity among the entities in the ecology. That makes the analysis of KM at public library difficult to look into the details of the KM process. As a way of countering the challenges, the introduction of knowledge management in the libraries is recommended to embrace opportunities to expand the services to patrons. In this regard, Parker et al. [14] proposed the role of libraries as the center of knowledge management to local small businesses that do not have enough resources to keep their own knowledge management function and get competitive intelligence for themselves. Even though their proposition is not clearly defined, thus cannot be utilized in the practice, it is noteworthy at least they tried to redefine the role of the libraries in the community in unfavorable environments.

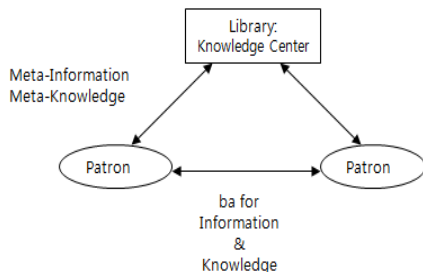
Also in KC literature, public libraries are considered to be important as a center for knowledge creation and exchange, idea generation through conversations, and

resulting innovation [1]. Also Priestly [16] mentioned the importance of knowledge management concept for the futuristic library management, recognizing the public library as a prime center of the extension of thoughts and knowledge.

3.4 From centralized exchange model to decentralized knowledge center

Nonaka et al. [12] emphasizes that knowledge creation is context-specific, compared with context-free information processing. So, for the creation of knowledge, a shared place or physical context, under which problems are defined or knowledge creation is required, should be taken into account. Since knowledge is created through the interactions among individuals and their environments, Nonaka et al. [12] argue that the first step of knowledge creation is setting up a so called “ba”. Ba evolves and sets binding conditions so that participants view the world through the ba. It also provides participants with higher viewpoints than their own [12].

Compared with the Amazon model which does not require a ba, in the Napster model we need a different perspective. As in Figure 2, Napster, now defunct music sharing portal, provides a pivotal mechanism through which a user can search who owns the music file that he or she wants to listen to. We call it meta-data of the music file owners. But it does not hold the music for itself: a user connects to the other user directly, who owns the music, and downloads it.

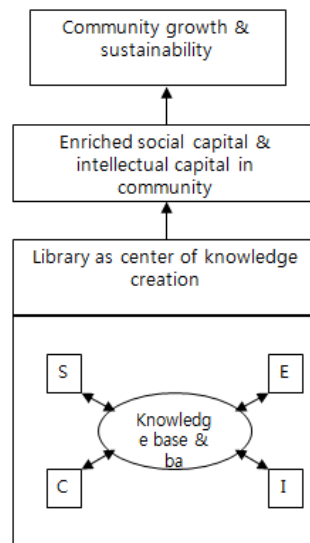


[Figure 2] Decentralized Hub Model: Napster Model

Compared with the Amazon model where the central hub is overloaded for handling of all the transactions involved, Napster model delegates the main transactions to patrons. The center in the Napster model performs supporting and facilitating functions for patrons.

Based on the contrasting two views, we can claim that the evaluation methods such as DEA and BSC are confined to the Amazon model. Now we shift the evaluative approach to a public library from the traditional to knowledge oriented.

Combining the arguments in section 3 along with the decentralized model in this section, we propose the following normative and hierarchical sustainability model that emphasizes the role of a local public library in a community.



[Figure 3] Community sustainability leveraged by public library as knowledge center

Inside the box of “Library as center of knowledge creation” in Figure 3 is the extension of the model in Nonaka [10]. That is, we included knowledge base and knowledge ba. For the knowledge creation, groups of community members with the similar interests play critical roles. They participate in the knowledge creation process autonomously and in reciprocal ways.

Knowledge base includes meta-knowledge such as a knowledge directory of existing knowledge groups and a knowledge yellow page containing who is interested in what or who is knowledgeable about what and so on. The knowledge base may also include knowledge produced as a result of group knowledge creation process.

As noted in Nonaka et al., [12], a place where people meet together is crucial for knowledge creation. The place can be a physical place for face-to-face meeting or virtual space. However, if tacit knowledge is involved, a physical ba is found to be the most effective. In this regard, a public library may provide diverse knowledge ba so that creative friction can occur freely.

4. Analysis of a public library

In this section we use the framework proposed in section 3.4 for the analysis of a public library, Ridgewood Public Library (RPL), Ridgewood, New Jersey. In the analysis we evaluate the status quo and provide strategies for enhancing community knowledge creation and community sustainability.

Ridgewood is located in the north west of New Jersey. Its population is about 25,000 and the average household income is \$196,141 as of 2009. The public school system is consisted of six elementary schools, two middle schools, and one high school. A brief description of the Ridgewood Public Library is as follows:

4.1 Overview of Ridgewood Public Library

4.1.1 Organization

For the organization of RPL there are two lines of commands; official and unofficial. The Friends of the Library, an informal organization, provides supports, advises and feedbacks to the formal organization. It also actively engages in fund raising for financial support of the library. Current membership size is 30. Major decision making is done at the monthly regular

meeting. The Board of Trustees consisting of 11 members makes strategic decisions that include the issues of governance, finance, investment, media, events, and fundraising. The Board of Directors of 21 members deals with rather short term library operational issues.

Of the 62 current employees, 30 persons are full timers. Also 22 hold Masters degree in the Library Science. It also relies on volunteers from local high school teens, adults, and ESL (English as Second Language) supporters. It is noted in Siew [17] that volunteering brings benefits to both society at large and the individual volunteers. It makes important contributions, economically as well as socially. It also contributes to more cohesive society building trust and reciprocity among citizens.

4.1.2 Budget situation

As in the other libraries in New Jersey, the Ridgewood library is under severe budget constraints. The total budget for 2009 amounts to \$2,601,949 with the budget per capita in the community of \$103. The total budget is comprised of 87.6% from the local village government, 0.97% from the state government, 7.8% from user fees, 0.74% from grants, etc. The Ridgewood village government appropriated 1.5% of its total budget to the library in that period. To fill the budget deficit for the 2011 fiscal year, the library has sponsored a funding campaign in which the board of the library trustees pledges to provide the half of the raised from the local residents as a matching fund. The library also is developing programs which will attract user payments from Computer classes, ESL programs and so on.

4.1.3 Facilities

The library provides ample spaces for reading and discussions along with a computer learning center, equipped with 10 Apple computers with a large screen. It also began digital book service, even though the contents are limited to a short list.

4.2 Knowledge Creation Processes

The main thrust of a public library has been to strengthen the level of intellectual knowledge of its individual residents by promoting reading printed materials. However, for a community to become sustainable, it is necessary to mobilize the capability to create knowledge needed. We believe that the capability is a driving force for community sustainability as in private organizations. In this respect, we analyze RPL in terms of knowledge creation process, delineated in Figure 3. We note that an activity at RPL is not singularly mapped to a specific knowledge creation process; it may apply to more than one process.

■ Socialization

Nonaka [10] emphasized the role of socialization as the starting point of knowledge creation. We believe that this process needs to be recognized as a turning point from traditional library to knowledge creating community. The RPL sponsors the following socialization activities: Every Friday there are movie watching events under “Friday Movie Matinee” or “World Cinema with Discussion”. It also provides multi-cultural events of storytelling and history, concerts, and the Women Gardeners meeting.

■ Externalization

The process involves the transformation from tacit to explicit knowledge. RPL sponsors such activities for the process as “Book Circle”, “Reader’s Choice Book Group”, and “Great Decision Making”. Book Circle is a monthly meeting for the discussion of a book chosen. The library prepares sufficient number of copies of the chosen book through inter-library loan in advance so that the participants can borrow for the reading. For each session, a discussion leader is designated to overview the book and to manage the discussion. Diverse views, pieces of knowledge and experiences among the participants come forth during the discussion.

Reader’s Choice Book Group is based on the chosen article from Reader’s Choice. The group discusses related subjects, moderated by a leader. Trial & Death of Socrates by Plato was one of the latest topics.

Great Decisions is a monthly discussion session. It discusses the current world issues based on the chosen article from the magazine of Great Decisions. The topic includes controversial ones such as US foreign policies, social, financial, and so on.

It also opens sessions like calligraphy and art for adults and students.

■ Combination

Traditional role of libraries is to promote individual-based knowledge combination process through reading books. Above the individual level, RPL provides a distinct knowledge combination program for the community called “Genealogy Association”. The program is under the sponsorship of the Bergen County to trace the local history and make a database of genealogical roots. The Association is also cooperating with the national genealogy society. Local cultural heritage knowledge buildup was emphasized in [2] for community knowledge growth.

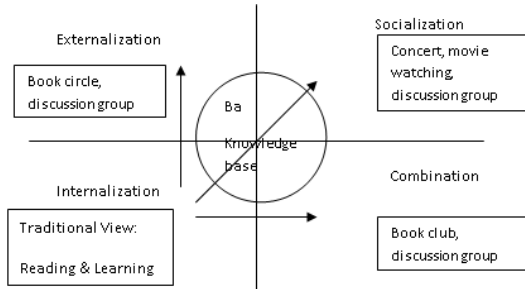
■ Internalization

Book reading facilitates knowledge internalization process as well as combination. But it is also limited to individuals. Most of the traditional library is organized for this type of knowledge creation process. Programs such as ESL classes, career development and business development are some examples of internalization process.

Based on the knowledge related activities of RPL, we found the following facts:

- 1) Nonaka [10] claimed that “organizational knowledge is created through a continuous dialogue between tacit and explicit knowledge”. In this respect, since RPL promotes diverse discussion groups, it recognizes the importance of social gatherings and knowledge exchange.

- 2) Knowledge creation place, or "ba", is limited to library sponsored activities. Thus, appropriate ba for sharing and exchanging diverse tacit knowledge does not exist.
- 3) For Nonaka's knowledge creation model to be relevant, a community knowledge base which accumulates explicit knowledge obtained by community members should be available for sharing among the community members.
- 4) Future direction of the RPL regarding knowledge creation needs to change from individual internalization and combination process to socialization, externalization, and combination process at group or community level.
- 5) The current knowledge creation activities of RPL and future direction for augmenting the community knowledge creation process capability are described in Figure 4. The needs for ICT based community of practices are as follows:



[Figure 4] Current state and future direction of knowledge creation process at RPL

For socialization, externalization, and combination process, physical ba's are crucial. In this regard, RPL provides diverse ba's through physical venues.

However, it is remarkable that no electronic ba based on information and communication technology exists. While the current ba's are designed by RPL, the electronic ba's will flexibly support the autonomous knowledge needs of the community. Thus, in the future, RPL and local people need to set up diverse community of practices (CoP). In this way current knowledge creation process will be enriched and local

knowledge and social capital creation process will be augmented by CoP activities.

5. Conclusion

While many are worried about the traditional mission of the public library in the future of ICT dominance, we need to change our perspective of the library as knowledge creating entity. ICT is considered to be useful for storing and disseminating explicit knowledge type. So the proponents of advances in IT for public libraries don't see the essential problems facing the public libraries. If their arguments are true, then the Internet and related technologies such as semantic web and customized data services can displace the public local libraries.

Even though some literatures did mention the importance of local library as knowledge center, they did not go into detail about the creation of knowledge in the community. Also we extend the applicability of knowledge management concept beyond a profit-oriented organization to a non-profit community center. In this context, we examined the role of public community library as a community center which facilitates the knowledge and social capital creating processes. Based on the concepts of knowledge city, social capital and knowledge management literatures, we proposed a framework of a library's knowledge creating processes. The framework could be used for the evaluation of the library functions and the derivation of strategies from that perspective. Using the framework, we analyzed the Ridgewood Public Library to test the validity of the framework.

We also recommend that the library needs to appoint a chief knowledge officer to manage the knowledge base at the RPL, and help community members to organize diverse knowledge ba's. It is also recommended to set up digital space for storing knowledge yellow pages and explicit knowledge created. In this way the library can trace and accumulate its history of knowledge creation processes.

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