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CEPIS NEWS

Decision-Making: A Dialogue between Project and Programme Environments

Manon Deguire

This paper proposes to revisit and examine the underlying thought processes which have led to our present state of DM knowledge at project and programme levels. The paper presents an overview of the Decision Making literature, observations and comments from practitioners and proposes a DM framework which may lead to empowering project and programme managers in the future.

1 Decision Making

"Decision-making is considered to be the most crucial part of managerial work and organizational functioning."

Mintzberg in [2 p.829]

According to some definitions, a *decision* is an allocation of resources. For others, it can be likened to writing a cheque and delivering it to the payee. It is irrevocable, except that a new decision may reverse it. Similarly, the decision maker who has authority over the resources being allocated makes a decision. Presumably, he/she makes the decision in order to further some *objective*, which he/she hopes to achieve by allocating the resources [1].

Different definitions of what a decision is and involves abound in literature that spreads through the knowledge of many centuries of all disciplines [2]. Decision Making (DM) is very important to most companies and modern organizational definitions can be traced back to von Neuman and Morgenstein in 1947 [3], who developed a normative decision theory from the mathematical elaboration of the utility theory applied to economic DM. Their approach was deeply rooted in sixteenth century probability theory, has persisted until today and can be found relatively intact in present decision analysis models such as those defined under the linear decision processes. This well-known approach uses probability theory to structure and quantify the process of making choices among alternatives. Issues are structured and decomposed to small decisional levels, and re-aggregated with the underlying assumption that many good small decisions will lead to a good big decision. Analysis involves putting each fact in consequent order and deciding on its respective weight and importance.

Although most descriptive research in the area of DM concludes that humans tend to use both an automatic non-conscious thought process as well as a more controlled one when making decisions [4], the more controlled approach to DM remains the most important trend in both theoretical and practical models of DM. However, this dual thought process is possible because of the human mind's capability to create patterns from facts and experiences, store them in

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> “The paper presents an overview of the Decision Making literature, observations and comments from practitioners”

the registers of long-term memory and re-access them in the course of assessing and choosing options. Many authors refer to this mechanism as "intuitive DM" a term that has not gained much credibility in the business environment and is still looked down upon by many decision analysts.

Given the years during which modern Project Management was developed (as well as other management trends), it is not surprising to find that the more controlled, linear mechanistic approach to DM permeates its literature and the project context seems to have neglected the importance of the *softer* and/or *more qualitative* aspects of the management domain that are now being recognized as essential for good business to develop. Therefore, in the new context of projects and programmes, quantitative aspects of the DM process are progressively becoming secondary issues to such qualitative issues as the *meaningfulness* of a decision for different stakeholders and for the overall organization.

Project managers are repetitively expected to *listen* to different stakeholders' needs and account for the numerous qualitative and quantitative variables when making decisions, however, both information overload and organizational constraints usually make this difficult to implement and very little guidance can be found in the project literature. If anything, the overwhelming importance of the DM issue seems rather accepted as *common knowledge* for project managers as it is not mentioned or explored in the *PMBOK® Guide* [5] or in other popular project approaches despite the bulk of recent research and growing interest in this domain. In spite of the increasing importance placed on DM knowledge and skills, many project and programme managers continue to struggle with the concept that can stand in the way of career progression and may be one of the primary factors preventing project and programme success.

Project management practice is permeated with the thought that in order to facilitate DM in the project context, simple (linear) evaluation tools should be widely used. However, it has now long been documented that these decision-support tools are no longer sufficient when project managers' roles have grown to accommodate the ever-changing complexity of the business environment. This situation has added considerably to the number of variables and the dimensions of an already complex web of relationships brought about by the stakeholder focus. With such changes as the implementation of Project Management Offices, Portfolio Management, Program Management and Project-Based Organizations, project managers are now called upon to interact with an ever-expanding pool of stakeholders and other tools, such as meetings, reports and electronic networks which are also important. Intuition, judgment and vision have become essential for successful strategic project and programme management.

Without an appropriate framework, some authors have suggested that managers do not characteristically solve problems but only apply rules and copy solutions from others [6]. Managers do not seem to use new decision-support tools that address potential all-encompassing sector-based elements, such as flexibility, organizational impact, communication and adaptability, nor technological and employee developments. There is therefore a potential for managerial application of new, value creation decision-support tools. Because these are not mature tools, in the first instance they might be introduced in a more qualitative way – *'a way of thinking'*, as suggested in [7], to reduce the managerial skepticism. Recent decision-support tools might be fruitfully combined with traditional tools to address critical elements and systematize strategic project management.

It is now a well-accepted fact that traditional problem-solving techniques are no longer sufficient as they lead to restrictive, linear Cartesian conclusions on which decisions were usually based in the past. Instead, practitioners need to be able to construct and reconstruct the body of knowledge according to the demands and needs of their ongoing practice [8]. Reflecting, questioning and creating processes must gain formal status in the workplace [9].

In [10] it is implied that management is a series of DM processes and assert that DM is at the heart of executive activity in business. In the new business world, decisions need to be made fast and most often will need to evolve in time. However, most of the research is based on a traditional linear understanding of the DM process. In this linear model, predictions are made about a known future and *decisions are made at the start of a project, taking for granted that the future will remain an extension of the past*.

2 DM at Project Level

The commonly accepted definition of a project as a unique interrelated set of tasks with a beginning, an end and a well defined outcome [5] assumes that everyone can identify the tasks at the outset, provide contingency alternatives, and maintain a consistent project vision throughout the course of the project [11]. The 'performance paradigm' [12][13] used to guide project management holds true only under stable conditions or in a time-limited, change-limited, context [14][15]. This is acceptable as long as, by definition, the project is a time-limited activity, and for the sake of theoretical integrity, is restricted to "the foreseeable future."

The traditional DM model has provided project managers with a logical step-by-step sequence for making a decision. This is typical of models proposed in the decision-making literature of corporate planning and management science of the past. It describes how decisions *should be*

made, rather than how they *are* made. The ability of this process to deliver *best* decisions rests upon the activities that make up the process and the order in which they are attended to. In this framework, the process of defining a problem is similar to making a medical diagnosis, the performance gap becomes a symptom of problems in the organization's health and identification of the problem is followed by a search for alternative solutions. The purpose of this phase of the decision-making process is to seek the best solution [16, Ch. 1]. Several authors have identified a basic structure, or shared logic, underlying how organizations and decision-makers handle decisions. Three main decision-making phases can be defined: *Identification* by which situations that require a decision-making response come to be recognized, *Development* involving two basic routines (a search routine for locating ready-made solutions and a design routine to modify or develop custom made solutions) and *Selection* with its three routines (screening, evaluation-choice and authorization) [17].

3 DM at Programme Level

More recently, many organizations have felt a need to further develop towards a fully projectised structure, which goes beyond a simple portfolio approach and involves the management of strategic decisions through programmes [18][19]. This move has somewhat shifted the responsibilities and decision-making roles of project and programmes managers. At this level, several projects needs to be managed together in order to create synergies and deliver benefits to the organization rather than delivering a specific product or service in isolation and in most organizations programme managers are actively working within a paradox. They have an official role in a legitimate control system (project level), facilitating an integrated *transactional* change process, and simultaneously participate in a shadow system in which no one is in control [20].

A mechanistic style of management warranting a more rational and linear approach to DM is appropriate when goals are clear and little uncertainty exists in the prevailing environment [11][21]. programme management practice is not meant to replace this management focus; rather, it encompasses it in a larger context. Here, managers cannot control their organization to the degree that the mechanistic perspective implies, but they can see the direction of its evolution [22]. When several variables are added to a system or when the environment is changed, the relationships quickly lose any resemblance to linearity [23]. This has been raised by many authors in reference to strategic issues such as the organization's competitive position, the achievement of the programme's benefits and the effects of changes on the programme business case [24][25]. These same issues have traditionally been processed through a project view of change control rather than a strategic view of change management with one of the main drawbacks being that these standard approaches focus on a linear programme lifecycle [26][27]. According to these authors, focus on early definition and control of scope severely restricts flexibility thus negating the value of having a programme. Furthermore, insistence on a rigid life cycle intrinsically limits the ability of the programme to adapt in response to evolving business strategy [26].

> "A Decision Making framework is proposed which may lead to empowering project and programme managers in the future"

When studying the implementation of strategic projects, Grundy [25] found that cognitive, emotional and territorial themes were so intrinsically interwoven to the decision-making process that he suggested using the concept of "*muddling through"* originally introduced by Lindblom in 1959 [28]. Similarly unsatisfied with the rational model of decision-making at top management levels, Isenberg stated in [29] that managers "*rely heavily on a mix of intuition and disciplined analysis*" and "*might improve their thinking by combining rational analysis with intuition, imagination and rules of thumb*" (p.105).

Much of the literature concerning decision-making at higher management levels seems to manifest perplexity and more questions than answers. By increasing our knowledge in this domain and providing an appropriate framework, project and programme managers might find material to reflect and possibly enhance their skills to better fit each environment.

4 Discovering Project and Programme Level Views

Beer [30] felt that most organizational research was irrelevant to practitioners because practitioners worked in a world of chaos and complex systems, whereas research was still about simple and equilibrated systems operated by researchers who maintain their objectivity. In order to respond to such concerns, this research project was set in a *participatory paradigm* [31] and uses a mix of observation and semi-structured interviews. The interview questions are based on the theoretical framework that was developed from the literature review and designed to capture the complex web of thought processes leading to decisions. The main objective was to uncover characteristics of linear and non-linear decision situations at project and programme levels. All respondents were either project or programme managers and had a good understanding of the differences between these roles and responsibilities.

Project managers typically described their working environment as consisting of "the team of people on the project" and DM activities involved either these specific people or the project specific tasks and goals. DM analysis was often restricted to project level variables and remained

> “Decision Making is very important to most companies”

confined to the scope limits and constraints of the project.

On the other hand, as this example clearly demonstrates, one programme manager described her work environment from an organizational point of view and her discourse was not programme specific: "*The programme manager has to relate not only to the different projects involved in the programme, but also to the organization in terms of people (horizontal and vertical relationships) as well as the short, medium and long term strategy*". This view was also coherent with how project managers in our study perceive the programme managers' roles and responsibilities.

Programme managers were described as *seeing things from above* implying that the thought processes used at their level of analysis is different than those useful to *oversee* one project. The general impression is one of managing many ongoing concurrent decisions rather than a sequenced series of bounded decisions. A typical response from a project manager describing the programme management role was: *"programme managers look down from above at different projects and need to pace several projects and the resources involved in groups of projects together."* When describing her own role, one programme manager states: "*developing strategic goals that are in line with the governance is really important, that's one part of the job. Then figuring out how to deliver that strategy is the other part."*

Project managers speak of themselves and are referred to by programme managers as dealing with single projects and having to make more sequenced isolated decisions (technical, human related…). Decisions at this level are referred to as being more independent from one another and sequenced in time. One decision is followed by resolution until another decision has to be made. Each decision is more discrete in nature (technical, human resource, procurement related) whereas programme decisions are often interrelated, covering many areas simultaneously.

One project manager described his work in the following way: *"My projects have a beginning and an end. I am involved mainly in engineering projects at the moment and they have specific finish dates."* A programme manager's descriptions of the project manager's role was that *"a project manager deals more precisely with things like budgets and constraints of the project that they are in charge of, they seem to operate within specific parameters."* The vocabulary used to describe decisions at the project level was generally more precise and specific.

Both project and programme managers feel that DM activities occupy a major part of their day or time at work. It was extremely difficult for both groups of respondents to evaluate the number of decisions taken in the course of any fixed period of time (day, month…). A typical response from one project manager illustrates this when he says: *"I would say I can spend the better part of my nine hours at work making decisions, from small ones like deciding to change activity or big ones like for example a large screen project […] this could mean making hundreds of decisions per day."* Similarly, one programme manager states that *"A great deal of time is devoted to decision making activities at the beginning of the programme, perhaps 100% of my time gets devoted to it at this phase as I am looking at things like risks involved."*

Although it was difficult for both project and programme managers to quantify the time spent on DM activities or the number of decisions involved in their work, their subjective evaluations all converged to say that they felt they spent a great deal of time in DM activities.

Both groups also feel that in the initial phase of the project or programme, they spend almost all their time making and taking decisions. This was described as an acute DM time. Later phase decisions seem to focus on more specific issues for project managers; either described as technical or human relation issues. programme managers mention the technical issues sporadically and mainly in the context of understanding what is going on. But unlike project managers, technical versus human resources is not one of the important dichotomies in the themes of their DM discourse. When technical DM was discussed it was usually in terms of grasping a better understanding of what people actually did, the skills or appropriate environment to enhance their performance, but not to actually solve the technical problem at hand or to make any decision about it.

When questioned about the use of specific DM tools one project manager spontaneously described the traditional rational method of DM: *"When the problem is purely a technical one, it is easy in a way because we have tools to measure what is going on like oscilloscopes and things. Even if it looks like a complicated problem with thousands of cables, then we look at the symptoms and we come up with a diagnosis often this is based just on our experience of similar problems [...] We have a discussion on how to go about it, how to measure it, we cut the problem in half and we*

> “Practitioners need to be able to construct and reconstruct the body of knowledge according to the demands and needs of their ongoing practice”

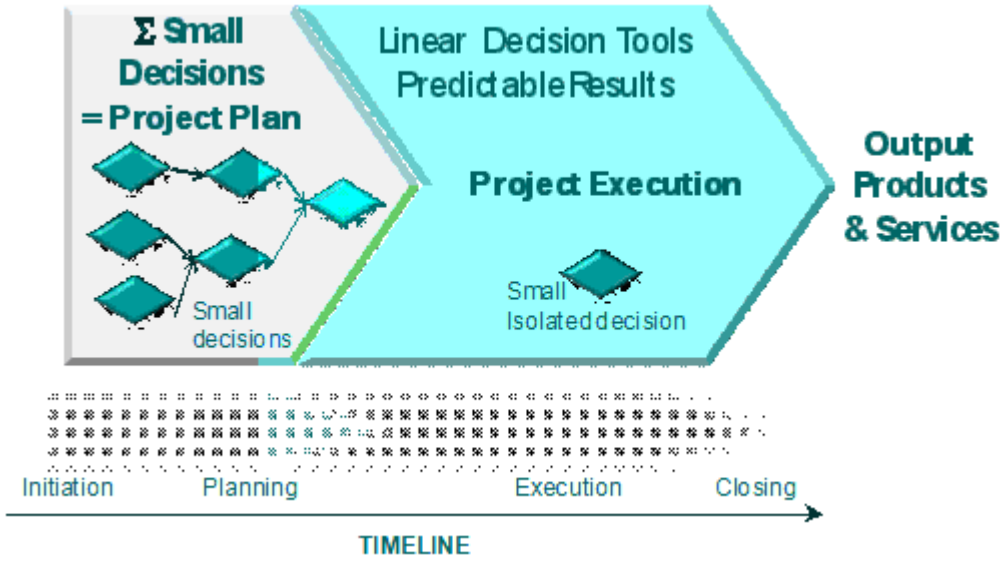

Figure 1: Decision-Making Model in Projects.

again look at the symptoms. So, in a way, in the decision making process we breakdown the problem to something that we can observe or measure." This description could have been taken from a number of DM texts that are concerned with the way decisions should be made. In fact, for project managers, most purely technical decisions seem to follow the traditional DM model, breaking down into more manageable small decisions and exploring alternatives against each other. However, even in this group, many state that few decisions are purely technical and say that most decisions involve a human component that varies in importance. The importance of this aspect ranges from at least equal to out-weighting the technical aspect. Together with the traditional DM breakdown process, experience is usually mentioned as a key factor of the DM process.

Contrary to the discourse held by project managers, there are no such straightforward textbook answers from programme managers. This could be simply symptomatic of the sample; however, programme managers describe an iterative ongoing process of information gathering in order to make sense of holistic situations. One programme manager saw herself as constantly gathering information in or-

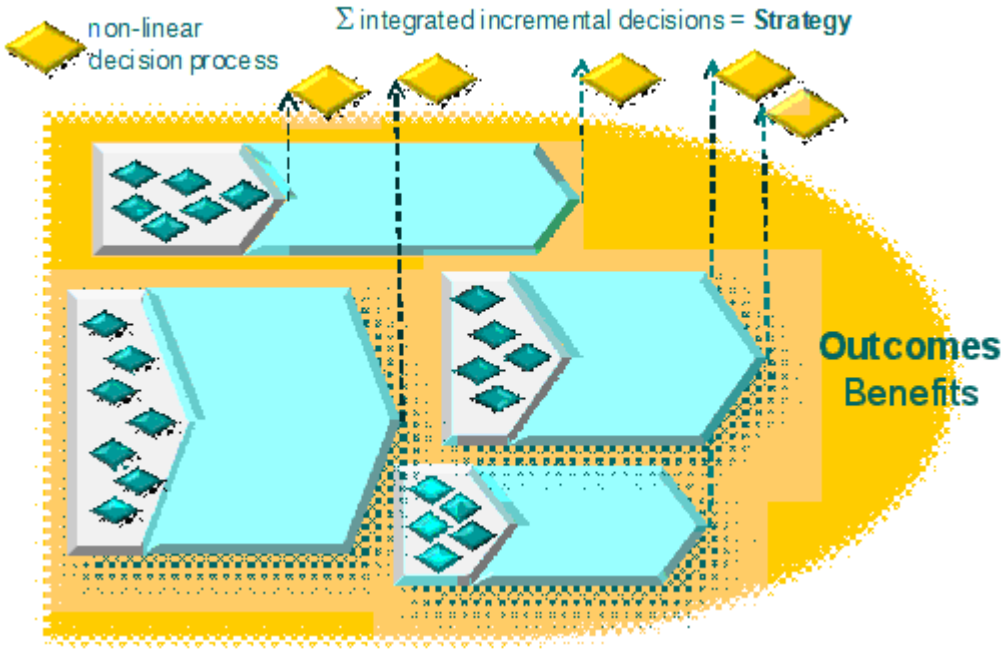

Figure 2: Model DM in Programmes.

> “Three main decision-making phases can be defined: *Identification*, *Development* and *Selection*”

der to organize it in a cohesive way. Talking about the programme she is presently involved in, she described the process in the following words: *"It involves many different people at different levels and I need to set time aside to understand exactly what is going on. Then, I will need to get back to them and formulate how it all fits in together, but I need to give myself some time to get my head around it."*

5 Discussion

The data analysis shows that project managers seem to have a natural predisposition toward using a more traditional and structured approach to DM. This observation can be accounted for in more than one way and the research method employed does not enable the establishment of causal relationships. The difference could be caused by the nature of their roles and responsibilities or that people who have personal affinities for this type of DM approach tend to be attracted to this type of work. Further psychological testing would be necessary to establish this second type of relationship. Nevertheless, project managers have described logical step-by-step sequences that could actually have been used as examples for the typical models proposed in the DM literature such as those described in [16] and [17]. Although critics of this approach have outlined the fact that the ability of this process to deliver *best* decisions rests upon the activities that make up the process and the order in which they are attended to, the project managers interviewed seem comfortable with, and skilled at, using this method to resolve problems.

Within this DM model, project managers also tend to use a process of deductive reasoning more often than programme managers that have described processes of inductive reasoning as a preferential thought process when engaged in DM activities. Aristotle, Thales and Pythagoras first described deductive reasoning around 600 to 300 B.C. This is the type of reasoning that proceeds from general principles or premises to derive particular information (Merriam-Webster). It is characteristic of most linear DM tools used in the context of high certainty. These tools are aimed at achieving an optimal solution to a problem that has been modeled with two essential requirements:

a) Each of the variables involved in the decision-making process behaves in a linear fashion and

b) The number of feasible solutions is limited by constraints on the solution.

These tools rely almost entirely on the logic and basic underlying assumptions of statistical analysis, regression analysis, past examples and the linear expectations and predictions they stimulate. A good example is the story of Aristotle who is said to have told of how Thales used predictive logic to deduct, from accumulated historical data, that the next season’s olive crop would be a very large one and bought all the olive presses, making a fortune in the process. However, given that deductive reasoning is dependent on its premises, a false premise can lead to a false result. In the best circumstances, results from deductive reasoning are typically qualified as *non-false conclusions* such as: "All humans are mortal. Paul is a human è Paul is mortal".

From the project managers’ perspective, the project’s basic assumptions and constraints are the starting premises for all further decisional processes. In fact, these initial conditions of the project environment act as limits or boundaries, necessary for this type of DM process to be effective. Project managers generally feel that most large decisions are actually made during the first phases of the project, before and during the planning stage. Project management typically delivers *outputs* in the form of *products and services* and most project decisions are made to commit to the achievement of these specific outputs [32]. This perspective infers that a series of small decisions that amount to the project plan, are made during the planning phase and finally add up to what is referred to as a *large decision*: the approved project plan. All these decisions, that shape the project, are made at the onset of the project. All later decisions are considered less important, more specific, and aimed at problem solving; often limited to one domain of knowledge at a time (i.e. technical, human relations…). Because most large decisions have been made at the onset, once the scope is defined, it limits the number of possible dependant variables in the DM process. The number of significant stakeholders involved is also limited and the overall situation is described as limited to the project’s immediate environment. Much of the DM follows a relatively traditional structured model to which the deductive thought process seems to adapt readily. Figure 1 illustrates this DM model for projects.

6 Programme Management Framework

A particularly interesting finding is the fact that deductive reasoning does not seem quite as popular or as universally called for in the DM processes of the programme managers we interviewed. However, the use of *inductive* reasoning seems more popular than for project managers. De-

> “Contrary to the discourse held by project managers, there are no such straightforward textbook answers from programme managers”

“DM processes at project and programme level differ significantly in the timing, pacing and number of major decisions, as well as the nature of the DM processes employed”

ductive reasoning applies general principles to reach specific conclusions, whereas inductive reasoning examines specific information, perhaps many pieces of specific information, to derive a general principle.

A well known example of this type of thought process is found in the story of Isaac Newton. By observation and thinking about phenomena such as how apples fall and how the planets move, he induced the theory of gravity. In much the same way, programme managers relate stories about having to collect information through observation, questions and numerous exchanges in order to put the pieces together into a cohesive story to manage the programme. The use of *Analogy* (plausible conclusion) is often apparent in the programme managers' discourse. This process uses comparisons such as between the atom and the solar system and the DM process is then based on the solutions of similar past problems, intuition or what is often referred to as experience. Contrary to project management where most decisions are taken to commit to the achievement of specific outputs, programme management typically delivers *outcomes* in the form of *benefits* and business case decisions are taken over longer periods of time depending on the number of projects that are progressively integrated to the programme and to the timing scale of these different projects [32].

These decisions increasingly commit an organization to the achievement of the outcomes or benefits and the DM period, although important at the beginning continues progressively as the situation evolves to accommodate the changes in this larger environment. Typical responses from programme managers tend to converge toward an ongoing series of large decisions (affecting the totality of entire projects) as the programme evolves over time. This can be compared to the project level discourse that described large decisions at the onset and smaller ones (not affecting the overall business case of the project) as the project evolved. This is in keeping with the fact that, since programmes deliver *benefits* as opposed to specific *products* or *services*, the limits of the programme environment are not as specific or as clearly defined as those for the project. Organizational *benefits* are inherently linked to organizational strategy, value systems, culture, vision and mission. This creates an unbounded environment and basic assumptions are not as clear as for the project environment. This could account for the fact that deductive thought processes are less suited than inductive ones in the DM processes of programme managers.

7 Conclusion

Both project and programme managers were unanimous in recognizing the importance and the amount of time spent in decision-making activities and that further knowledge is needed in this domain.

It would seem that a more mechanistic style of management warranting a more rational and linear approach to decision making is appropriate when goals are clear and little uncertainty exists in the prevailing environment. The time-limited definition of projects makes them well adapted to this performance paradigm.

These observations do not aim to lessen the requirements for traditional DM, but highlight the fact that programme management DM practice encompasses a larger context. Here, managers cannot control their organizations to the degree that the mechanistic perspective implies, but have to develop an awareness of their future evolution. The implications are readily felt at the decisional level; when several variables are added to a system or when the environment is changed and relationships quickly lose any semblance of linearity.

Finally, this dialog has highlighted the fact that the DM processes at project and programme level differ significantly in the timing, pacing and number of major decisions, as well as the nature of the DM processes employed. Most large or important project decisions are bound by the project's basic assumptions and project managers tend to have a preference for deductive mental processes when making decisions. The occurrence of large or important programme decisions seems to persist throughout the programme life cycle as they are prompted by setting the assumptions for each project when these kick off. Because the programme delivers benefits and that these cannot be as clearly defined as products or services its environment is not as clearly defined or bound by set basic assumptions and inductive reasoning seems more suited to meet the programme managers' decision making needs.

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