

A Critique of the Vroom-Yetton Contingency Model Of Leadership Behavior¹

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The Vroom-Yetton contingency model of leadership behavior is described and critiqued. While there is some evidence for the validity of the model, the use of concurrent validation with self-report data seriously questions this validity. The model is of limited utility because it deals with only one aspect of leader behavior and is not as parsimonious as alternative models.

The Vroom-Yetton contingency model of leadership behavior (21) is of importance to managers because it was developed as a model of how leaders should make decisions if they are to be effective. If valid, the model could be used as a tool to aid in the selection of appropriate decision-making processes for different situations, resulting in increased decision and organizational effectiveness. The full Vroom-Yetton contingency model deals with individual problems and group problems (19, 21). This paper will analyze the group model since it has been most frequently presented and tested (3, 5, 7, 14, 16, 17, 18, 20, 21).

The model is deductive in nature, in that seven rules have been derived from the decision-making literature that are designed to protect decision quality and acceptance. The rules are applied to the characteristics of the problem in the form of a decision tree and 23 unique problem situations are identified. Each problem situation has associated with it a feasible set of decision processes that are appropriate for use in solving the problem (Figure 1).

Decision quality depends on objective aspects of the decision whereas decision acceptance de-

pends on subjective aspects of the decision (the feelings of people) (9).

Decision processes that may be used range from autocratic (AI, AII), to consultive (CI, CII), to group process (GII). Subordinate participation in the decision-making process increases in the order of AI, AII, CI, CII, GII. When using process AI the manager solves the problem alone, using information available at that time, while with AII the manager obtains any necessary information from subordinates and then makes the decision. CI is a consultive process in which the manager shares the problem with relevant subordinates individually and then makes the decision. With process CII the manager shares the problem with subordinates in a group meeting, and then makes the decision. GII is a group decision process where the manager and subordinates aim to reach consensus on the decision as a group.

When more than one decision-making process may be used for a problem (the feasible set), the manager is free to choose among them since decision quality and acceptance are protected for all decision methods in the feasible set.

Vroom and Yetton (21) identify two criteria for choosing within the feasible set. When the manager is guided by the desire to make decisions with the least expenditure of personnel hours, the most au-

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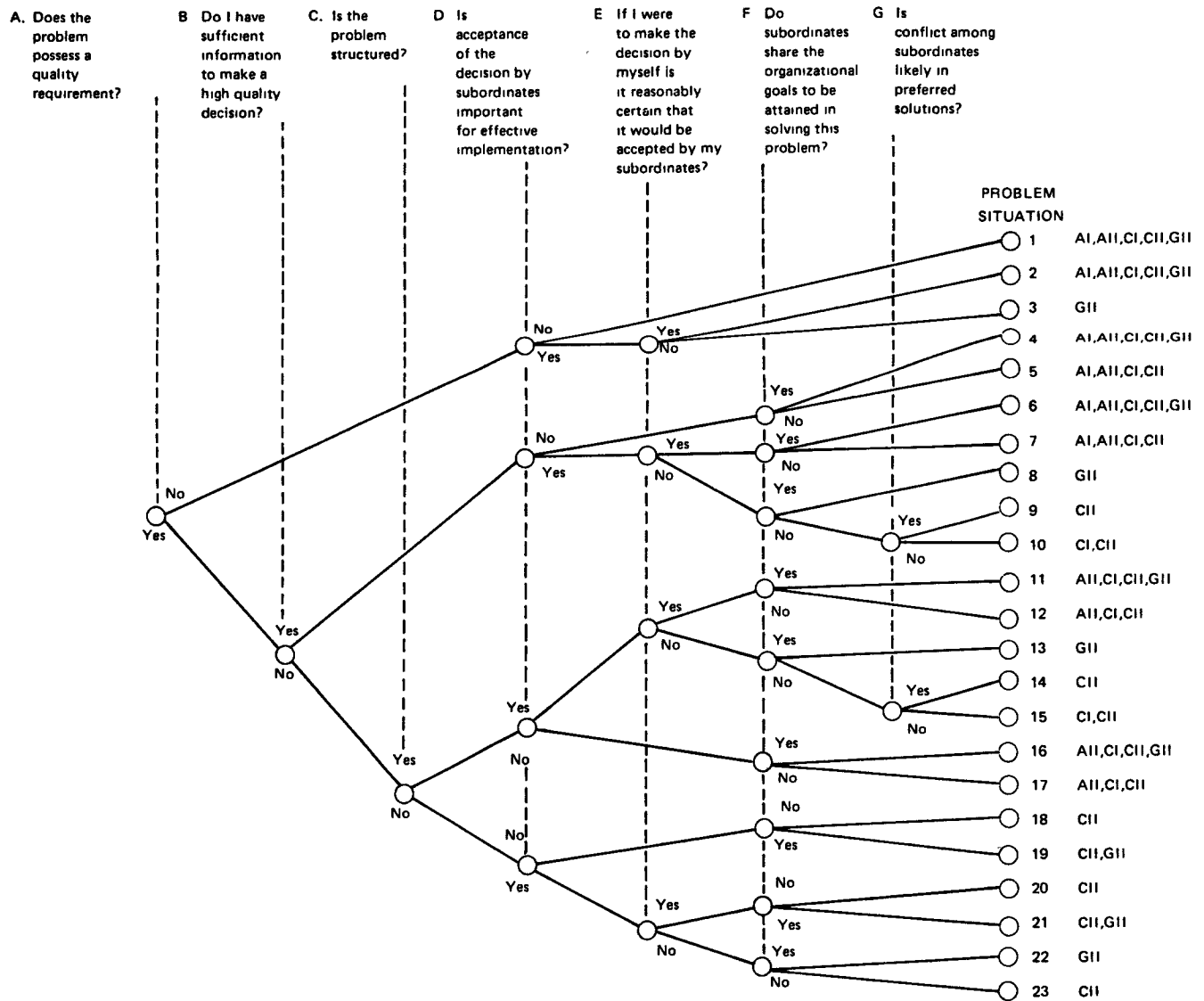


Figure 1
The Vroom-Yetton Contingency Model
of Leadership Behavior ^a

^a Adapted with permission from V. H. Vroom, "Can Leaders Learn to Lead?" *Organizational Dynamics*, Vol. 4, No. 3 (1976), p. 19, © 1976 by AMACOM, a division of American Management Associations and from T. E. Hill and N. Schmitt, "Individual Differences in Leadership Decision Making," *Organizational Behavior and Human Performance*, Vol. 19 (1977), p. 356.

tocratic of the decision processes in the feasible set should be chosen. This is identified as the short-term model since there is no emphasis on the development of subordinates. When the manager wishes to emphasize development of individuals and groups, the most participative of the decision processes in the feasible set should be chosen. This is identified as the long-term or developmental model.

Research Results

Vroom and Yetton (21) found that when a manager was asked to recall one problem recently solved in the role of manager, 85% of these problems had a quality requirement and 90% had an acceptance requirement. They also found that managers' decision-making behavior fell in the feasible set 68% of the time.

When managers were asked to indicate which decision processes they would use to solve standardized case problems, it was found that their decision-making behavior fell in the feasible set 69% of the time. Also, the short-term model that chooses the most autocratic decision method from the feasible set was found to be more varied in decision processes prescribed and slightly more autocratic than the managers tested.

Vroom and Yetton attempted to test the overall validity of the model. They reasoned that:

The validity of the rules underlying the model would be indicated by the degree to which employment of methods used that were outside the feasible set result in decisions of lower quality or lower acceptance than those within (21, p. 183).

They had 136 managers who were unfamiliar with the model describe one problem they recently had to solve. These managers also specified the decision process used, the status of the problem attributes (in order to determine the feasible set), and decision quality and acceptance (on seven point scales).

Vroom and Yetton found that in 97 of 136 problems (71%) the manager's decision process fell in the feasible set, but almost every decision (132 of 136) was rated as having high quality and acceptance. Therefore, a comparison of quality and acceptance of decisions inside and outside of the feasible set showed little difference. Decisions

made with processes outside the feasible set were found to have slightly lower quality and acceptance than decisions made with processes inside the feasible set, but these differences were not statistically significant.

Vroom and Yetton also found that decision quality or acceptance was lower when a quality or acceptance rule was violated than when it was not, but again the differences were not statistically significant.

Evidence of Model Validity

Vroom and Jago (20) have recently tested the Vroom-Yetton model, extending the results of Vroom (17), and have avoided the lack of variance of decision quality and acceptance encountered by Vroom and Yetton (21). They had 96 managers who were unfamiliar with the model select and report one successful and one unsuccessful decision made in their managerial role. The managers then reported the decision method used to solve each problem and the overall effectiveness, quality, and acceptance of the solution. Managers were later trained in coding problem attributes and determined the feasible set for each problem.

Results show some evidence of model validity. Decisions made with processes inside the feasible set were found to be significantly more likely to be rated as successful than were decisions made with processes outside the feasible set. The model did not predict perfectly, however, in that decision processes within the feasible set did not guarantee success and decision processes falling outside the feasible set did not always result in failure (51 of 181 decisions fall in these categories).

Vroom and Jago (20) also found that decision quality or acceptance were significantly lower when the respective quality or acceptance rules were violated. Overall, these results show some, but limited, evidence of the model's validity.

Methodological Issues

Self-Report Effect

The major threat to the internal validity of the model is the fact that it has been tested with self-report data (20, 21). In a major test of the model (20) managers were asked to list the details of one successful and one unsuccessful decision-making sit-

uation that they personally experienced in their role as a manager. This case writing occurs after the managers have been exposed to the five decision processes, a chapter concerning problem solving (9), and practice in choosing a decision process for each of 30 standardized cases. After writing the two cases, the managers report the decision process actually used for each case along with a rating of the decision's overall effectiveness, quality, and acceptance. Managers are then trained in understanding problem attributes and subsequently code the problem attributes of each of the two previously reported problems in order that the feasible set for each problem can be ascertained.

It is possible that managers report successful decisions as using a rational decision process that was appropriate to the situation, regardless of their actual behavior. Thus, self-reported rational behavior would tend to match the rational model and the model would be validated. Similarly, ineffective decisions could have leader behavior reported as falling outside the feasible set. The leader would attribute the ineffectiveness of the decision to others and would report the decision process used was inappropriate to the actual situation, even though the decision process used was appropriate to the situation as it then existed.

A further error could occur because the dependent variables of decision effectiveness, quality, and acceptance are self-reported on seven point scales. When asked to report an effective decision, the manager will likely report high decision effectiveness, quality, and acceptance and may have cognitively distorted the actual levels of these variables. Similarly, when reporting an ineffective decision the actual levels of effectiveness, quality, and acceptance may be cognitively distorted and reported at low levels. The effect of this error would be to artificially increase the difference between effective and ineffective decisions and thereby increase the probability of supporting hypotheses concerning effective and ineffective decisions.

Jago and Vroom (6) report that subordinate's perceptions of managerial behavior do not correlate significantly with the superior's own descriptions of the same behavior. This raises the question of the validity of manager behavior self-reports. To test this, Jago and Vroom (7) matched what managers

said they would do in standard cases to what they said they did in similar self-reported cases, and found a significant positive correlation. This result suggests that managers act as they say they would act on a hypothetical decision, although the finding is a correlation between two self-reports.

To evaluate the extent of these potential self-report effects, reported decision process, situation attributes, decision effectiveness, quality, and acceptance must be validated against objective measurements of these variables. This validation could be performed as part of a laboratory test of the Vroom-Yetton model, where variables are controlled and objective measurements are available.

Experimenter Effect

An experimenter effect would be present if subjects tried to guess the hypotheses being tested and supplied supporting data. Vroom and Jago (20) have attempted to minimize this problem by giving subjects specific instructions and decision trees with feasible sets not identified. Further, they state that this is not a problem because of the complexity of the model and the difficulty in guessing the hypotheses.

However, it is possible that an experimenter effect is present in the Vroom and Jago (20) test of the model because subjects are exposed to Maier's chapter (9, ch. 1) on problem solving which sets forth three basic types of problems. These three types are: (a) decision quality most important, (b) decision acceptance most important, and (c) decision quality and acceptance both important. Since the Vroom-Yetton model is similar to Maier's development in the emphasis on decision quality and acceptance it is possible that subjects have a basic understanding of the model before they are asked to supply data to test it.

Social Desirability Effect

A social desirability bias toward fitting the model could occur if for effective decisions managers report they used more participative decision processes than they actually did. Managers are likely to do so because of the current social emphasis on participation.

This bias would occur because participative decision processes are included in the feasible set more often than are autocratic decision processes.

Note that the autocratic processes AI and AII are found in the feasible set for 6 and 10 of the 23 problem situations respectively, whereas the participative processes CI, CII, and GII are found in the feasible set for 12, 19, and 12 of the 23 problem situations (Figure 1).

Standardized Cases

A potential internal validity problem exists in that Vroom and Yetton (21) developed the model using 30 standardized cases to represent different combinations of problem attributes. A full manipulation of the seven problem attributes (coded Yes/No) would require 128 standardized cases. This number was reduced to 30 by Vroom and Yetton because of time limitations when gathering data. They say this reduction can be made because of logical or empirically demonstrated relationships between the seven variables, but reducing the number of relationships tested has eliminated the possibility of discovering relationships that run counter to logic or previously demonstrated empirical relationships.

This criticism has been dealt with by Hill and Schmitt (3) who tested a shortened Vroom-Yetton model with a completely crossed design. They found that 37% of leader decision method variance was due to situational effects and 8% was due to individual effects. This result is very similar to that of Vroom and Yetton (21) who found variances of 30% and 10%, respectively.

Steinman (14) found that the 30 standardized cases confound the hierarchical level of subordinates. If managers report they would use more participative decision processes with subordinates of higher hierarchical levels, then the Vroom and Yetton result that the seven situational variables predict participativeness may be spurious.

Jago (5) performed a test of the above result and found that confounded differences in hierarchical level did significantly inflate the relationship between three situational attributes (B, D, and G of Figure 1) and the level of participation chosen by managers on the cases. However, Jago notes that the size of this relationship has been reduced for only three of the seven situational attributes, and that all situational attributes are still significantly related to manager's choices of participative versus autocratic decision processes.

Jago (5) has developed a new set of 30 standardized cases that does not confound hierarchical level, thus increasing the internal validity of the instrument.

Reliability

A final threat to internal validity when using the model prescriptively is the reliability of problem attribute coding by model users. Vroom and Yetton (21) found that on standardized cases the percentage of subject problem attribute coding matching expert coding went from 30% without training to 63% with training. Allowing for minor differences in coding which make no difference in the feasible set selected, the percentage of subject coding matching expert coding is 45% without training and 78% with training. These results imply that coding reliability without training is not adequate. Even with training, errors in problem attribute coding will cause the selection of inappropriate decision processes in some cases.

External Validity

The major threat to external validity is that the model may not be generalizable to naturally occurring problem situations, since the model was developed and tested using standardized cases and self-reported decisions. Standardized cases were developed to vary systematically on selected problem attributes and were rewritten until most persons (75%) reading the cases could agree on the presence versus absence of the seven problem attributes. These cases are therefore fairly unambiguous and do not reflect the ambiguity of real-life decisions. Self-reported decisions could be biased toward important, unambiguous, or short-term problems, because reporting such a decision would be more meaningful or easier for the manager. Generalizing the model to less important decisions, long-term decisions, or decisions where problem attributes are not as clear could prove difficult.

The Vroom-Yetton model presents a simplified view of reality, which lessens its usefulness as a prescriptive tool. While any model is an abstraction of reality, currently 55% to 60% of the variance in managers' selection of decision processes remains unaccounted for by the model (3, 21). Individual difference variables, structural variables (2, 14), and other situational variables could be added to

the Vroom-Yetton model to provide a more complex model that would likely explain more of the variance in managers' selection of decision processes. This additional complexity will avoid a simplified view of reality, but poses the threat of the model being too complex to use in actual practice (1, 14). Phelps and Shanteau (13) have, however, found that experts judging livestock could use information from a large number of dimensions when explicitly presented with the information in a hypothetical situation, but used few dimensions when dealing with a more realistic situation. It seems then that the Vroom-Yetton model could be made more complex and still be used in actual practice if the problem situation dimensions were dealt with explicitly.

A basic assumption of the Vroom-Yetton model is that it should be prescriptive (21), allowing managers and leaders to determine which decision method to use in different situations. Later in their book, Vroom and Yetton declare that "we have viewed leadership development as the principal application of our work" (21, p. 208); a switch of emphasis from prescription to leadership training. In a later work, Vroom (18) maintains that the model is useful for training managers in leadership and decision making, but is not intended to train managers to program their choices of decision style. However, Vroom and Jago (20) find evidence for the overall validity of the Vroom-Yetton model and state that the model can be used prescriptively in its present form to reduce many errors found in current managerial practice.

It is not clear if the model is intended to be a training tool, a prescriptive device, or both. The limited evidence available supporting the validity of the model and the threats to model validity raised in this paper imply that the model should not as yet be used for prescriptive purposes or leader training.

Discussion

Assumptions of the Vroom-Yetton Model

Vroom (15) reported that three classes of outcomes that are relevant to effectiveness and affected by participation in decision making are: (a) quality, (b) acceptance, and (c) time taken to reach the decision. Decision quality and acceptance are protected in the Vroom-Yetton model by the seven normative rules, but decision time is used only to

describe the short-term and developmental models. Vroom and Yetton (21) argue that the time available for a specific decision is not an important factor (usually managers have more than one week to make a decision), and so does not need to be explicitly included as a rule defining the normative model. However, the amount of time taken to solve a problem is the expenditure of a resource, and this should be balanced against the benefits gained. Therefore, the time taken to make a decision and the expected benefits should be considered when selecting from the feasible set.

Decision processes that comprise the feasible set do not guarantee quality and acceptance, but offer a better chance than do the decision processes not in the feasible set. Vroom and Yetton (21) state that decision processes left in the feasible set have equal likelihoods of meeting quality and acceptance requirements. However, different decision processes require different skills of the leader if they are to be effective. Autocratic decisions require leader task knowledge and communication skills, while group participation decisions require leader discussion and conference skills. Since managers can be expected to vary on their levels of these skills, then they can be expected to be more effective when using decision processes of the feasible set that most closely match their skills.

The goal-congruence rule of the Vroom-Yetton model implies that managers may act in the organization's interests but that subordinates may not. It is inconsistent to maintain that managers will not allow their self-interests to interfere with their decision making while subordinates have no such restriction. This assumption limits the model's correspondence with reality as the model will not account for actions a manager may take that are motivated by self-interest.

Problem attributes of a situation should be similarly coded by all managers, but Hoffman (4) has noted that one problem of the model is that managers are apt to answer problem attribute questions in a way that reflects their leadership style regardless of the actual situation. For example, an autocratic manager could be expected to answer "yes" to attribute E, "If I were to make the decision by myself, is it reasonably certain that it would be accepted by my subordinates?" This will allow the

manager to continue using an autocratic decision process and avoid participation, even when the situation calls for a participative process. This effect is possible, because Vroom and Yetton (21) have found that individual differences accounted for 8.5% of the variance in managerial choices among alternative decision processes.

The Vroom-Yetton model has the form that managers attend to certain situational variables and select a decision process based on the states of these variables. The decision process chosen causes decision effectiveness. This conception of causality may be too limited, since Lowin and Craig (8) have found that subordinate performance can affect preferred leadership style. A manager may wish to closely supervise subordinates who are not performing well, while greater freedom and participation may be allowed those performing well.

Boundary Conditions of the Vroom-Yetton Model

Vroom and his colleagues present a managerial training program (16, 17, 18, 21) that exposes managers to the concepts underlying the model. The program includes peer discussion concerning leadership styles, and how to apply the model to a problem situation and identify the feasible set. Since this training is required in order to use the model reliably (21), the population that may use the model prescriptively is limited.

Another boundary condition of the Vroom-Yetton model as a theory of leadership is that it deals with only one facet of leader behavior, that of selecting a decision process for a particular problem situation. The model ignores the discussion and conference skills required of the manager to actually solve the problem (4). The Vroom managerial training program attempts to develop these skills, but no evidence of the effectiveness of the training program has been presented.

Theoretical Alternatives to the Vroom-Yetton Model

The Vroom-Yetton model is founded on Maier's definition of effective decisions being a function of quality and acceptance (9), and focuses on choosing the appropriate decision process for each problem situation. A manager wishing a prescriptive

analysis of a decision situation could use a much simpler model developed by Maier (10).

In a readings book that summarizes fifteen years of research he and his colleagues conducted on problem solving and creativity, Maier presents a four-way classification of problems and how these decisions should be made (10, pp. 325-327). A Type I problem has a quality requirement, acceptance is likely to be obtained easily, and the decision should be made by the leader. Type II problems do not have a quality requirement but acceptance is critical. These problems should be resolved by group decision. Type III problems do not have quality or acceptance requirements and should be decided by the flip of a coin. Maier cautions against using participative approaches with this type of problem as unnecessary conflicts may be generated. Type IV problems require both quality and acceptance and are solved by using managerial skills. These leadership skills can be directed toward persuasion or group discussion, but Maier emphasizes the latter.

It seems that Vroom and Yetton (21) have added unnecessary complexity to Maier's simple model of four basic problem types and decision processes that should be used to solve each type.

Further, Maier has gone beyond merely specifying problem types and suggesting leadership decision methods, but has done considerable research and has specified the skills managers will need in solving problems and how these skills may be acquired. He and his colleagues have reported a number of studies concerning solution quality, acceptance, the role of the leader in group problem solving, and conditions favorable to individual and group problem solving (10, 11). Maier has written a summary book of leadership methods and skills as well (9) and with colleagues has created a number of exercises that have been used for training and research (12).

Another theoretical alternative to the Vroom-Yetton model is a simplified model based on the one proposed by Vroom and Yetton (21). Note that in Figure 1, the decision process CII is in the feasible set for 19 of the 23 problem situations. Of the four situations where CII is not in the feasible set, GII is in the feasible set. A simple rule to guarantee a decision process in the Vroom-Yetton feasible set

and thereby protect decision quality and acceptance is:

If acceptance of the decision by subordinates is critical to effective implementation and it is not reasonably certain that subordinates would accept an autocratic decision, but they share organizational goals (or decision quality is not important), use GII; otherwise, use CII.

This simple model uses four situation attributes instead of the seven used by the Vroom-Yetton model and uses only two decision processes rather than the five of the Vroom-Yetton model. Also, this simple model offers a balance between the short-term time efficient model and the long-term group development model.

Since the Vroom-Yetton model can be significantly reduced in complexity and yet still utilize the core concepts of the model, those of protecting decision quality and acceptance, it seems that the current model is not parsimonious. The current complexity of the model has not been justified in the latest test of the model (20) because two of the seven rules underlying the model were found not to have a significant effect on decision effectiveness.

Conclusion

While some evidence for the validity of the Vroom-Yetton model has been presented, there are a number of criticisms of the model that question its validity and utility.

The major threat to the validity of the model is the use of concurrent validation with the problem attributes, decision process, decision effectiveness, quality, and acceptance all being self-reported by the subject manager. A predictive validation study of the model should be undertaken, using objective coding of these variables. Rigorous research of this kind is necessary before the model can be accepted as valid for use as a prescriptive decision-making or training tool.

The utility of the Vroom-Yetton model is questionable for two reasons. *First*, it is not as parsimonious as other models of leader decision process choice. *Second*, it deals with only one aspect of leader behavior, that of selecting different decision processes for different problem situations. Maier's work on problem solving deals with this aspect of leader behavior plus requisite leader skills and their development.

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