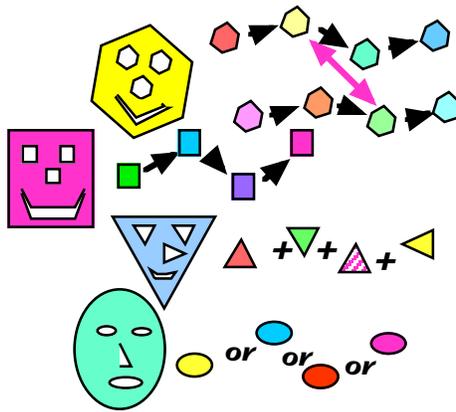


The Overlooked Managerial Competency:

Observing Complexity of Information Processing (CIP) to Match People to Jobs and Determine Future Potential

Embracing the concept of CIP moves talent management out of the realm of art and into the predictable world of science. This lays the foundation for reliable forecasting, targeted recruiting, personalized, just-in-time development, and inter and intra-organizational benchmarking.



By

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You Already Have Experience with Complexity of Information Processing (CIP)

Have you ever noticed when attending a presentation that the audience members respond in a variety of ways? One person asks questions to help her understand what the speaker has just said, while another asks questions concerning the implications of what was said. A third offers up examples of points the speaker intends to cover two or three slides later. That third person is demonstrating an ability to comprehend what was said and grasp the implications attached, as well as anticipate the points that naturally follow. In the same audience, there is often another person yawning in the corner because he has no idea what anyone is talking about.

These varied responses are indicators of the phenomenon of complexity of information processing or CIP. One's level of CIP determines the way in which we grasp, organize and extrapolate information to go about solving problems and making decisions. CIP is an indispensable, but not widely understood, factor in ascertaining both current and future work potential (Originally termed Complexity of Mental Processes (CMP) Elliott Jaques & Kathryn Cason, 1994, Human Capability).

Each of the audience members described likely has a different level of complexity of information processing. Different jobs require different levels of information processing. When employees occupy

a job that matches their current complexity of information processing ability, they have the greatest opportunity to find it suitably challenging and satisfying. Unfortunately, our research shows that an average of 35% of employees are mismatched to their roles leaving them frustrated by either over or under challenging roles.

CIP, The Indispensable Factor for Matching Employees to Jobs

Thus, in a similar way that managers develop skills in understanding, relating to, and working with differences in human personality, they need also be skilled in observing CIP in order to match individual capacity to the demands of specific tasks and roles.

CIP, The Indispensable Factor for Performance Management

Why? When the most loyal, hardworking, talented employee is mismatched to a role, she becomes immediately disabled – made incapable and ineffective. Many of the “labels” under-performing employees carry – poor communicator, poor leader, unmotivated, micromanager, defensive, lazy, complainer – are the result of poor placement, not actual incompetence or “personality flaws”. Proper placement can convert a “problem child” into a star performer, literally, overnight. Do you know anyone who goes to work each day intending to fail, to annoy, to neglect, or disappoint? If your answer is no, then how do you explain why so many employees fall short? Mismatching not only explains it; it allows for a relatively easy fix.

The goal of this article is twofold: to provide a glimpse into the sweeping implications CIP has for organizational effectiveness and to provide enough information for you to “see” the phenomenon of CIP for yourself. Becoming consistently accurate in distinguishing CIP levels requires training and practice beyond the scope of this article. We will provide an overview of CIP, focusing on the four specific CIP levels required for the first four levels of organizational work. Executive level work requires an even greater CIP capability, which is not discussed in this piece.

Further Defining CIP

A person’s complexity of information processing (CIP) refers to the maximum quantity and complexity of information that can be processed by the brain at the present time (we

call this limit a person’s current potential). CIP has been found to be a determining factor of the level of work, in terms of complexity, an individual can successfully perform. Of course, this is not the only factor to assess when considering a candidate for a job. Qualified candidates must also have the requisite knowledge, skills, experience and, preferably, a natural inclination toward the particular type of work called for by the job. However, these considerations make no difference if the candidate does not have the necessary level of CIP to carry out the “complexities” of the job. Although critical, these additional factors are sequentially subordinate to matching CIP level.

Once one’s current CIP level is discovered, it is possible to predict the rate at which an individual’s capacity will increase (future potential). This data can then serve as a reliable basis for helping managers create meaningful, individualized development plans for employees.

Observing CIP

The previously discussed audience example allows you to begin to sense the differing levels at which people grasp, organize, and extrapolate information. Some people seem to make more connections and see relationships among pieces of information that others don’t.

When we sense these abilities intuitively, most of us are limited to using ambiguous words to express what we are experiencing. We describe some people as sharp, clever, on-the-ball, smart, intelligent, or quick. Unfortunately, if we were to ask 10 people for definitions of the

adjectives listed above, we would get 10 different answers.

Becoming familiar with CIP levels gives managers a universal and consistent way of observing and discussing which employees would be suitable for varying levels of jobs.

Decades of research spearheaded by Elliott Jaques led to a relatively straightforward way of determining how any given individual processes information to solve problems and make decisions, which, as previously stated, likewise reveals at which level of the organization a person is best suited to work. It consists of examining both the structure and content of one’s speech when he is fully engaged in arguing a point.

Let’s define the first four levels of CIP capability necessary for organizational work. Note how each successive level allows for increasingly complex approaches to problem solving. Sample interview excerpts of people demonstrating the various levels of CIP follow each definition. As you read them, pay particular attention to the way the subjects group and organize their information. This can be done by attending to the connecting words such as *or*, *and*, *if*, and *then*.

1. Declarative problem solving is the least complex. It is representative of the problem solving needed in shop and office floor roles. It does not include the ability to see things coming. In work situations, it involves following procedures and addressing “glitches” only as they are encountered. Solutions are formulated in terms of independent thoughts. There is no explicit connection between or among ideas. This form is akin to disjunctive logic of A or B or C. Common jobs

requiring this level of problem solving are: Clerk, cashier, many administrative assistants, line worker, many technicians.

When asked the question, “How can we improve productivity at our manufacturing plant?”, one using declarative problem solving might answer:

Assembly Line Worker John: We need better equipment. It breaks down too much. Management should listen to line workers ideas more. We could help, but they don’t ask. They should rework the scheduling so we’re not so tired all the time from pulling long shifts.

The speaker presents three independent ideas. The solution could be doing any one of these, as opposed to doing all three of these. There is no explicit indication that two or three of the ideas should be done together.

2. Cumulative problem solving requires one to accumulate bits and pieces of information and begin to see a pattern: in other words – the ability to see things coming and be proactive. Solutions are formulated in terms of an explicit accumulation of related thoughts. The proposed solution is the weight of the sum of the parts. This form is akin to conjunctive logic of *A and B and C*. Common jobs requiring this level of problem solving are: first line manager, some district managers, many retail or restaurant managers, entry engineer, scientist, or programmer.

When asked the same productivity question, one using cumulative problem solving might answer:

Assembly Line Manager Susie: Our equipment is ancient. It breaks all

the time. We need updated equipment. Beside that, a suggestion box might help. The line workers have good ideas, but no one takes them seriously. The first suggestion I would put in the box would be for new equipment. And another thing we should do is make the schedules more consistent. We have people moving from day to night shift too frequently, and we require too many double shifts.

The speaker presents the same three ideas as in the preceding example. However, its explicit that implementation of all three parts is intended.

3. Serial problem solving requires the ability to see a series of cause and effect relationships. Solutions are formulated in terms of explicitly stated sequences of at least three items. This form is akin to conditional logic of *If A then B, and if B then C. A→B→C*. Common jobs requiring this level of problem solving are: some district managers, some regional managers, unit manager, any manager of first-line managers, sr. engineer, scientist, or programmer.

When asked the same productivity question, one using serial problem solving might answer:

Department Manager Joe: Our equipment breaks down all the time. This wrecks havoc with our scheduling and requires we reschedule employees for other shifts and/or have them pull doubles when the equipment is working. So we need to get the equipment replaced and then create a more consistent scheduling plan. It might make sense to get the line workers’ input on what type of schedules they would prefer before doing the plan.

The solution is a three-fold sequence of events.

Replace equipment → Seek scheduling input from line workers → Create more consistent schedule

4. Parallel problem solving requires the ability to see connections among multiple serial paths. Solutions are formulated in terms of explicit relationships between two or more series. This form is akin to bi-conditional logic of *If A then B, but if and only if C then D*.

Note: Serial problem solvers can conceive of multiple serial paths, but they deal with them independently. Common jobs requiring parallel problem solving are: large plant manager (250-300 people), director, general manager.

When asked the same productivity question, one using parallel problem solving might answer:

Plant Manager Joan: Well it’s obvious that we need new equipment to reduce downtime which kills our productivity. However, new equipment will call for much more electronics and computer savvy on the part of our maintenance staff. So, we need to begin to upgrade our maintenance department’s capabilities and to add staff now to prepare for the new equipment. At the same time, new equipment may make some line workers jobs obsolete. In order to minimize layoffs, we should see if any line workers are interested in cross training in maintenance and eventually becoming part of the maintenance staff.

Once all that settles down and all the training is done, we can make our scheduling more consistent. Our current scheduling is at the “will” of

the equipment. I know it makes the associates angry and there's no telling how many ways that impacts productivity.

The solution contains several explicitly connected series. The plant manager may need to slow down or speed up certain series in order for them all to come together at the step that is shared by all the series - Buy equipment. The end result of all these series being deployed interdependently is higher productivity.

Capital Investment Series: [Buy equipment](#) → Less down time → Higher productivity

Department Upgrade Series: Upgrade maintenance dept → Hire more maintenance technicians → [Buy equipment](#)

Direct Labor Series: Find line workers who want to enter maintenance → Begin cross training → [Buy equipment](#) → Some line workers become maintenance staff

Scheduling Series: [Buy equipment](#) → Training → Scheduling overhaul → Higher productivity

Human capability to process information

One's ability to process information is not static. It matures with age in a *predictable* manner. Therefore, once we have identified an adult's current complexity of information processing, his or her rate of growth (future potential) can be forecasted using Jaques' empirically developed and longitudinally validated progression curves.

Since it is a frequently asked question, it is worth mentioning that although current research indicates

that brain development can be influenced in early childhood, we do not yet know how to accelerate the development of complexity of information processing ability in adults.

For reasons not yet understood, some people mature to a higher level of information processing capability by the end of their careers. This is why some people desire to move up the corporate ladder to more and more complex jobs (high potential mode), and others are content to stay within one job throughout their career (expert mode). A full appreciation of this concept can help managers use their employee training and development dollars most effectively. Knowing an employee's progression path will point toward one of two developmental strategies: increasing depth of knowledge (expert mode) or breadth of knowledge (high potential mode).

Two equally reliable and valid methods for judging potential - Direct Observation and Managerial Talent Pool Evaluation

The method of direct observation of CIP described in this article will allow you to experience this phenomenon as people converse in a variety of everyday situations. Jaques has scientifically validated that accurate results can be achieved through direct observation by a trained observer. When employee selection decisions are being based on the observation technique, the protocol is for interviews to be recorded, transcribed and examined on paper in order to ensure accuracy of the observation.

An alternative approach can be used when an organization desires to judge the current potential of current employees rather than outside candidates. This approach, the Talent Pool Evaluation process or TPE, involves groups of managers and managers-once-removed making these judgments following a facilitated group process. Results between the two processes correlate at the 0.95 level. The TPE process allows managers to rapidly assess whether current employees are accurately matched to their roles without having to interview each employee individually.

All too frequently, selection, promotion and succession planning sessions evoke fear and paranoia within organizations. Instituting the TPE process can convert an emotionally-charged, ambiguous and frequently subjective process into a tightly-controlled, reliable process that actually *builds* trust. Any organization wishing to foster a culture of trust cannot do so without its selection and promotion processes being perceived as credible.

TPE requires input from multiple managers and judgments are based upon managers' past observations of employees demonstrating the various levels of problem solving capability as they go about their work. When managers share a precise vocabulary to talk about both job complexity and employee capability, accurate judgments can be made quickly, easily and consistently. Furthermore, because explicit and observable criteria are used to make judgments, both managers and employees perceive the process as objective and fair.

Conclusion

Managers, by definition, get work done through others. Any manager without an understanding of CIP's implications for doing this effectively has less than a full arsenal at his disposal. Therefore, providing managers with the ability to easily and

accurately place employees in roles where they can work at the fullest (current) potential is simply smart business with benevolent consequences. Furthermore, their having the ability to synchronize each individual employee's development activities with his or her increasing

capacity to process information allows for continuous, maximized deployment of your organization's human resources. Simply put, one competency all managers should boast is having a full understanding and appreciation for CIP. Do yours?

Try This

Field Observation Exercise for Distinguishing CIP Levels -

This exercise will give you a real world glimpse into how information processing manifests in speech. But first, a word of caution: the purpose of this exercise **is not** to make you an expert in assessing CIP. Rather, it aims to sensitize you to a human phenomenon. As with any psychological observation, discretion must be used with the information gained.

1. Converse with a diverse range of people over the next several weeks;
2. Ask them questions which require a thoughtful response;
3. Listen carefully to the *structure* of their response. Listen for connectors first, then for the ideas being connected. Make note of them so you can compare the responses with that of others;
4. Seek to identify the highest level of complexity in the structure. How does each person "group" information? Do the responses tend to be declarative, cumulative, serial or parallel? Cumulative and serial are the easiest to discern.

These are the processes required to perform first-level managerial work and manager-of-manager work.

Two tips that may help you identify cumulative and serial processors are:

- Strong cumulative processors tend to justify their argument with a forceful accumulation of 'and' statements.
- Strong serial processors tend to link the series of events which led to a situation or to forecast the series of events that are likely to result from a current situation.

An example: You might ask, "Why did you want your current job?"

1. **Declarative processing:** "They pay well. It's a nice place to work. The employment looks secure." (Three ideas with no *explicit* connection.)

2. **Cumulative processing:** "I wanted a job that paid well and was secure, but also where I'd enjoy working." (The content of this reply resembles the preceding declarative response, but there is an *explicit* connection between the three ideas.)

3. **Serial processing:** "My last situation was unstable. We had

frequent layoffs so my primary need was a secure position. That led me to seek a job in my field at a progressive company in a growing market." (The serial argument progresses *from my last situation was unstable to my primary need to that led me*. The last idea beginning with *That led me* is a cumulative argument with three parts *in my field + progressive company + growing market*.)

4. **Parallel processing:** "In this job I have more security than before. They prefer to avoid layoffs which has led to some creative ways to deal with variation in workload. I hope to move to manager level shortly which would be a step toward running a whole department, and perhaps, even the whole plant. It is interesting that I started seeking security and have come to realize that the prospect for advancement is filling the need for security." (Two sequences are mentioned, the first deals with security and the second advancement. The thinking remains serial until the two are explicitly linked together. A parallel response was used to link the related sequences.)

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