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I think people severely underestimate CPI. Some even go so far as to say that CPI does not have even a 1% effect in their own scaling. The exact purpose of writing this text is to show why this is problematic.
But before discussing why this matters, we need to define this 3 concepts: CPI, Judgement, and Computation.

- **CPI (Cognitive Proficiency Index)** - CPI is an index that provides an estimate of how efficiently cognitive information is processed for the purposes of learning, problem solving and higher-order reasoning. In the Wechsler scales, it is based particularly on the Working Memory and Processing Speed components. Pearson's description of the WISC-V directly defines CPI as “an estimate of the efficiency with which cognitive information is processed in the service of learning, problem solving, and higher-order reasoning.”
- **Judgement** - The capacity to determine which inference, decision, or action is better by evaluating the available information, conditions, and possible outcomes.
- **Computation** - The mental transformation and processing of information according to certain rules and procedures in order to reach a conclusion.

After defining these three concepts, we can move on to the main issue:
What is the relationship between Computation and CPI? CPI is the measurable form of Computation. No matter how correctly you make a decision, if you cannot hold that decision in your mind, process the steps sequentially, and do so quickly enough, that decision remains on paper. Working memory is your capacity to hold information in your mind and manipulate it, while processing speed is how quickly and accurately you can do this.

From this perspective, our judgements are completely dependent on Computation. But here I need to underline what I mean by "judgement." for prevent misconceptions as i defined i do not restrict Judgement, as others do, to a narrow ability set such as decision-making. When making an reasoning, whether you call it inference or reasoning it doesn't matter, judgement is present. When constructing a plan, when weaving a strategy, meaning when scheming, judgement is also present. So what truly separates these processes from another? Frankly, nothing. They are all simply

the same ability set wearing different applied different domains. And no matter what form this ability set takes, what lies underneath it is judgement. Moreover, this itself has been independently demonstrated.
It has been shown that planning problems can be translated into axioms of propositional logic and solved with a general-purpose logic solver. *(Kautz, H. & Selman, B. (1992). Planning as Satisfiability.)* If a planning problem can be transformed into an inference problem without losing anything from its meaning and solved with a general method developed for inference, then planning does not require a separate ability beyond making inferences. In other words, what makes planning possible is already exists within what makes reasoning possible.

The conclusion that follows from this is that the difference between reasoning and planning lies on the content to which the process is applied. In one, we work with premises and conclusions, and in the other, with states and actions. However, in both cases, what we are doing is finding a valid sequence of steps that reaches a goal from a starting point within a given set of rules. Building a strategy does not fall outside this definition either. Moreover, we can see this idea in game theory as well. With backward induction, the best strategy in a game is found by starting from the possible endings of the game and reasoning backward by logically deriving what the players will do at each step. Therefore, treating these processes not as separate abilities but as applications of a single ability set, namely judgement, to different domains is both more consistent and requires fewer assumptions.

So what is required first in order to make a judgement? First, an observation, meaning an input. Second, a system capable of taking this input and processing it, which in SCD is most commonly a brain. This is exactly what Computation is. If you cannot take the data in front of you and process it, you cannot reach any judgement from that data. However, an important distinction must be made here. Our judgements depend on information, and one of the biggest factors determining the quality of a judgement is Computation. In contrast, the judgement ability itself, in terms of its nature, is not dependent on Computation. Judgement only depends on a certain set of information. Let me explain this with a simple example. Imagine two sets:

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$A = \{x_1, x_2, x_3, ..., x_{20}\}$

$B = \{x_1, x_2, x_3, ..., x_{60}\}$.

Here, A is a subset of B, and the nature of the data in both sets is the same. In this case, a judgement based on set B has a higher probability of being accurate, because B not only contains everything that A contains, but also covers many more possible scenarios on top of it. The same judgement ability, when applied to two different sets, produces results of two different levels of quality.

This is why Computation is important. Set B is in front of you, but your mind can hold and process only twenty pieces of data at the same time. In this case, even though the remaining forty pieces of data in B are there, they are effectively nonexistent for you. Your judgement effectively works on set A. In other words, Computation determines which information judgement can access. No matter how strong your judgement ability is, it can only work with as much data as Computation allows in. This is why the nature of judgement is independent of Computation, but the quality of the result that judgement can reach is directly dependent on Computation. Moreover, in systems where the result can be logically derived, this is a necessity. In such a system, every step leading to the correct conclusion is already present in the data. Higher Computation means being able to follow more of these steps. Therefore, higher Computation can never produce a worse result here.

The moral of the story is that the conclusion we have reached is that you have experienced firsthand just how much computer engineering and IT can change our approaches to scaling SCD **:D** but it would be better if our university did not use post-Soviet information sciences as a source. Jokes aside, what the approach that underestimates CPI overlooks is quite simple. No matter how strong judgement is, it can only work with as much material as Computation provides to it. Working memory determines how much of this information we can hold at the same time, while processing speed determines how efficiently we can process it. CPI measures exactly these two. And in domains where the result can be logically derived, this is directly determinative.