

Review of  
**The Locality Principle**  
Peter J. Denning

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## What is the problem?

Virtual memory is prone to thrashing leading to a complete collapse of system throughput due to heaving paging. Its performance is highly dependent on the paging algorithm and also on their compilers paging mechanism.

## Summary

The locality principle is a very intuitive idea that guides system designers in identifying key aspects of the design which are prone to having influences from human cognitive behaviors. Locality is defined by the concept that an algorithm uses the same subset of pages for extended periods which is loosely coupled with how a programmer has implemented modularity in their solution. It reveals how a programmer solves the problem thereby giving it its own distinctive thumbprint.

## Key Insights

- The author describes developing the principle of locality into a behavioral theory of computational processes interacting with hardware.
- Identifying the situations in which the locality principle can be employed. The paper cleverly outlines this by saying the locality principle will be useful wherever there is an advantage in reducing the apparent distance from a process to the object it accesses.

## Strengths

- Locality principle is universal and can be employed in any situation where there is an advantage to reducing the distance between a process and its resource. The paper identifies multidisciplinary uses of the locality principle.
- The intuitive nature of the locality principle leads to easy understanding and easy implementation.

## Weaknesses

- The locality principle rests on the assumption that the resources seen in one window or time period are highly likely to be used again in the **immediate** future.
- I do not agree with some of the terminology used in the future uses section. The author describes some software as “autistic” and talks of them in a negative light. I feel like it was an insensitive or callous use of the term.

## **Summary of Key Results**

- The locality principle is an intuitive concept to guide system designers in identifying key aspects of the design that are prone to having influences from human cognitive behaviors.

## **Open Questions**

- How does today's systems capabilities and power affect the need for using the locality principle?