

Hidden Exposure: Measuring U.S. Supply Chain Resilience

A Discussion: *The Shapes of Supply Networks*

Benjamin Golub, **Northwestern** | at **Brookings** | September 2023

A useful taxonomy

Links

- [Input requirements \("basic Leontief"\)](#)

A useful taxonomy

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Shocks

- Technological (productivity)

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*Recent shocks raise important and new microeconomic questions even within a purely **classical** framework.*

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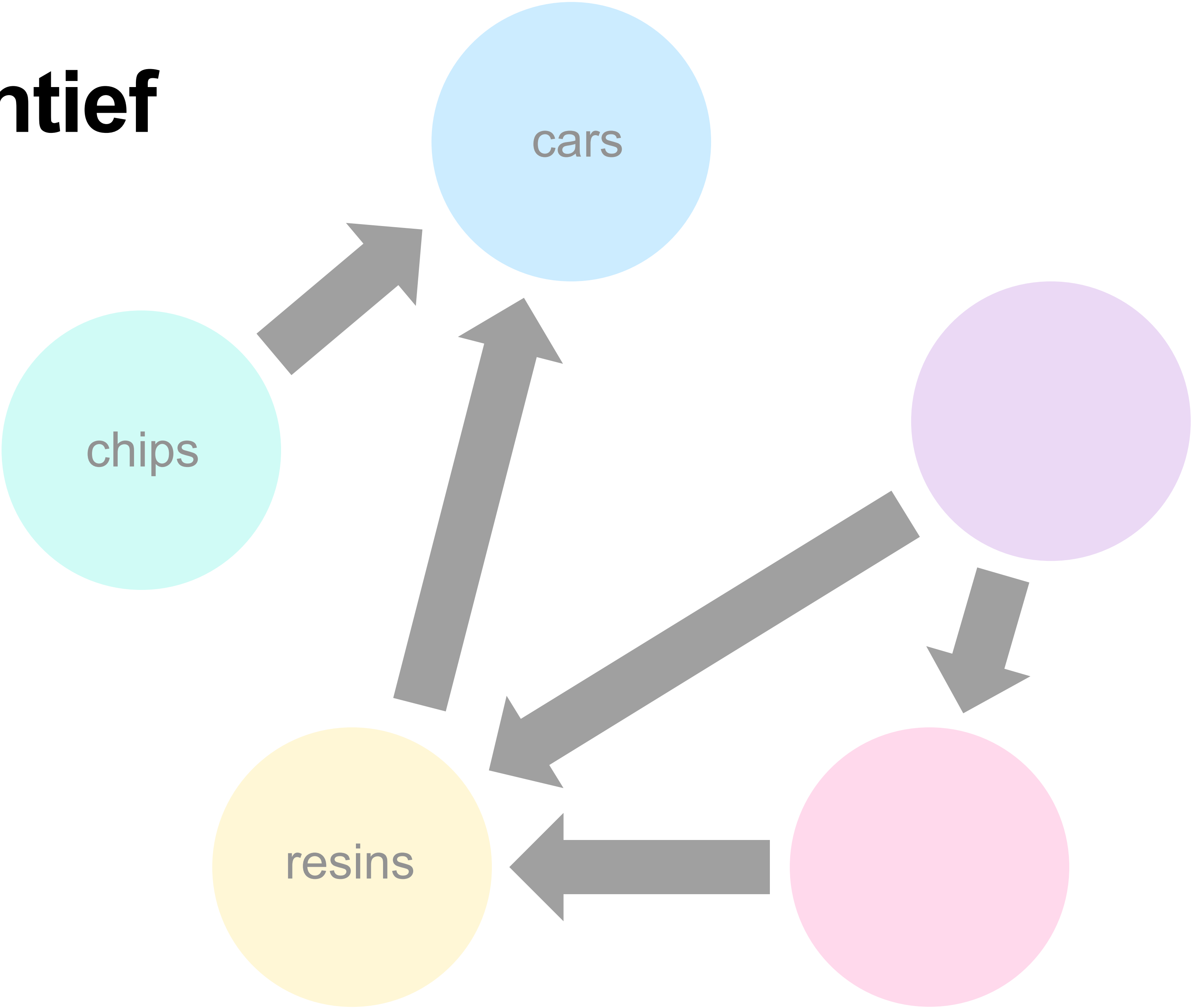
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The perspective of this discussion:

*Recent shocks raise important and new microeconomic questions even within a purely **classical** framework.*

*But they also raise new basic **conceptual** and modeling questions once we broaden each category.*

The Leontief network



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- Good evidence that firms have a hard time substituting on time horizons of 1-2 quarters ([Barrot and Sauvagnat QJE 16](#)).

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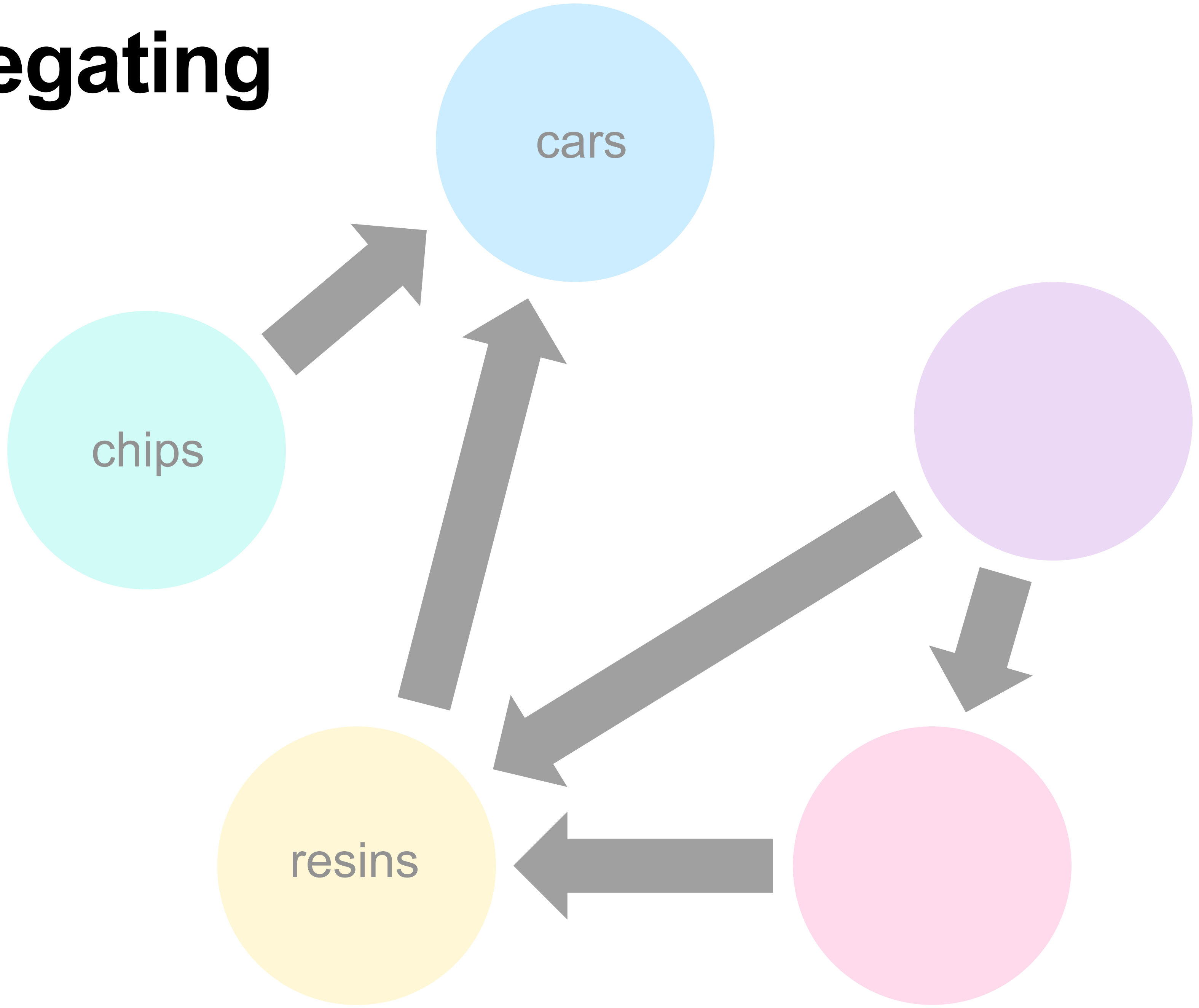
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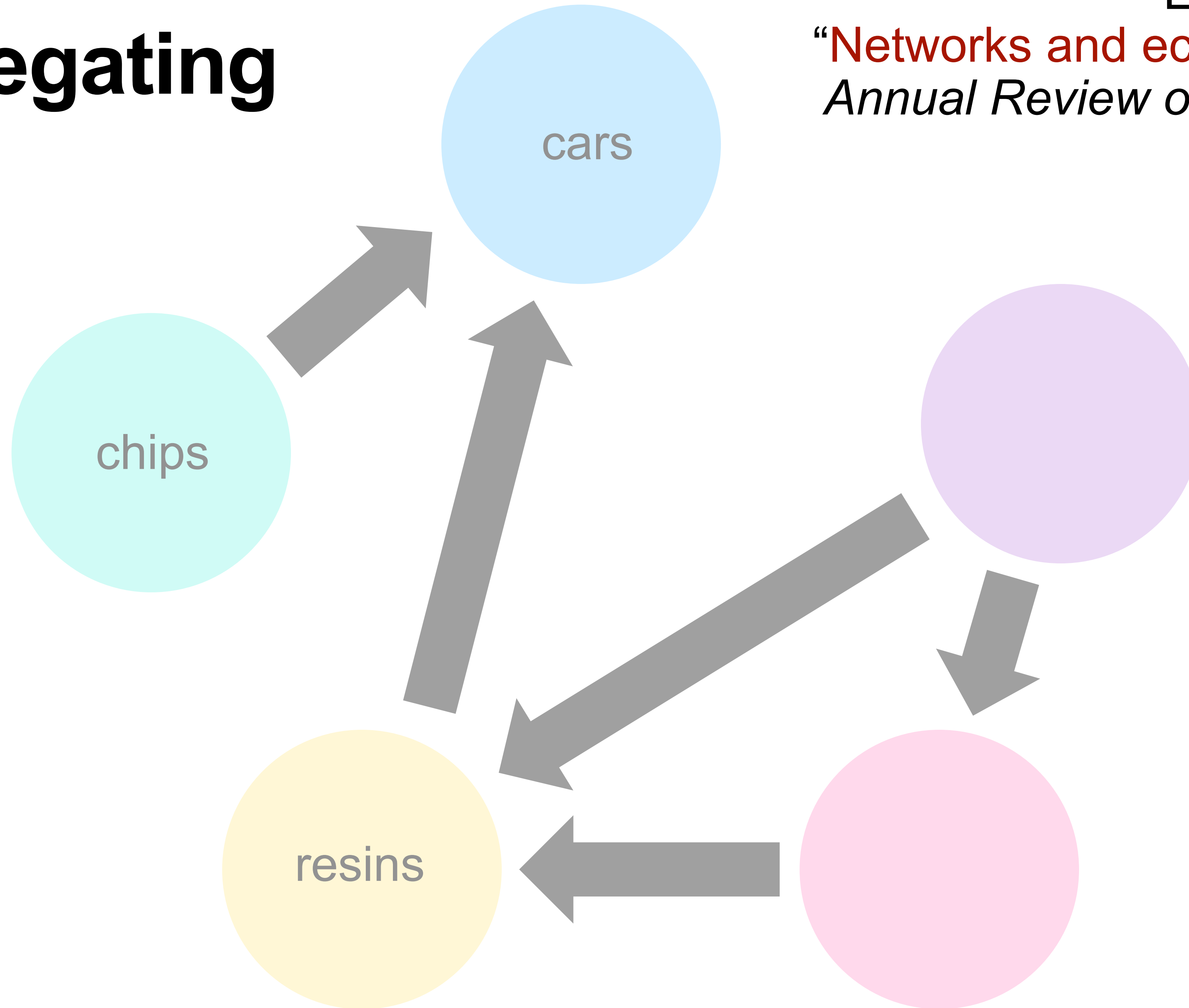
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Disaggregating



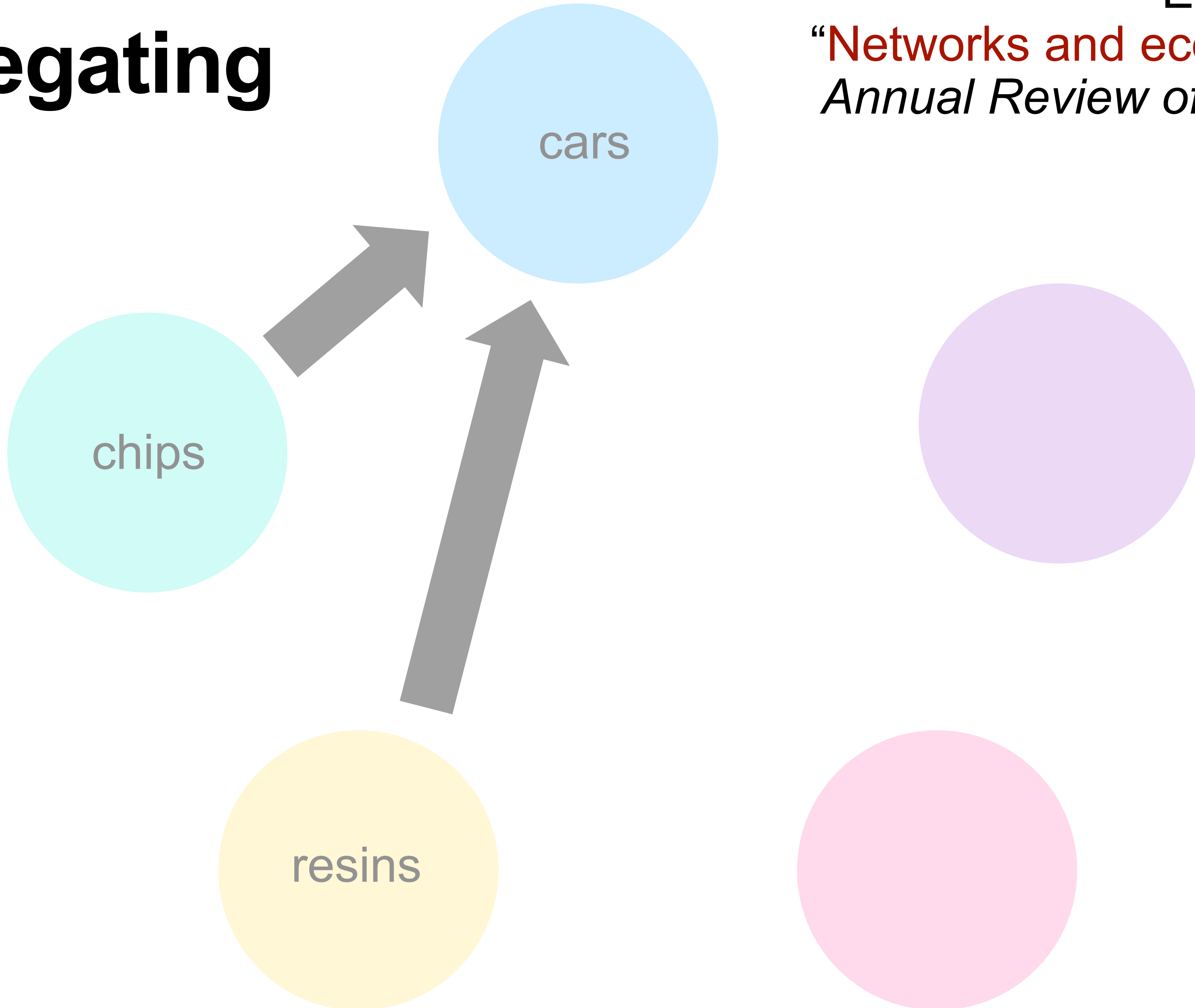
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Annual Review of Economics ‘22



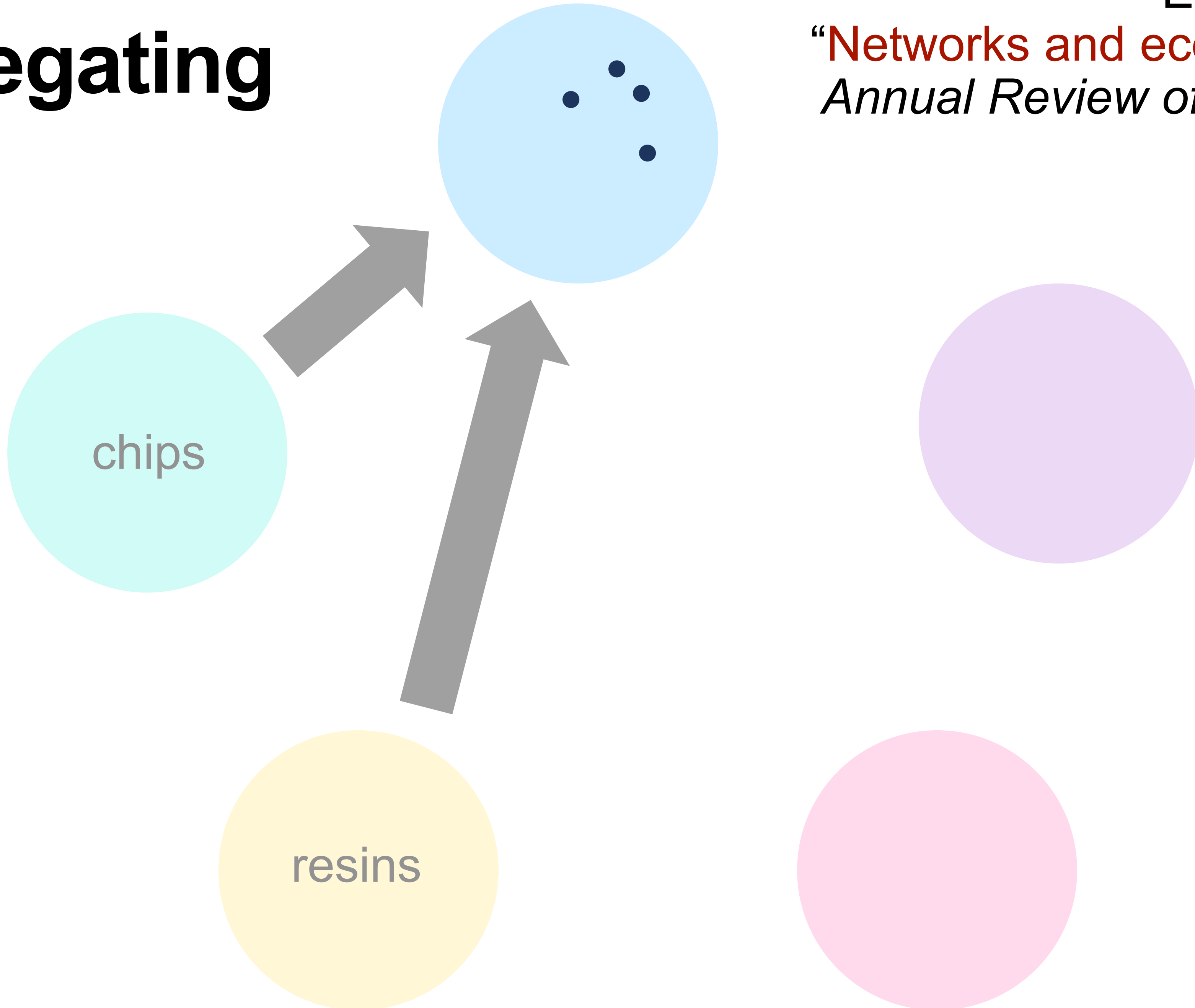
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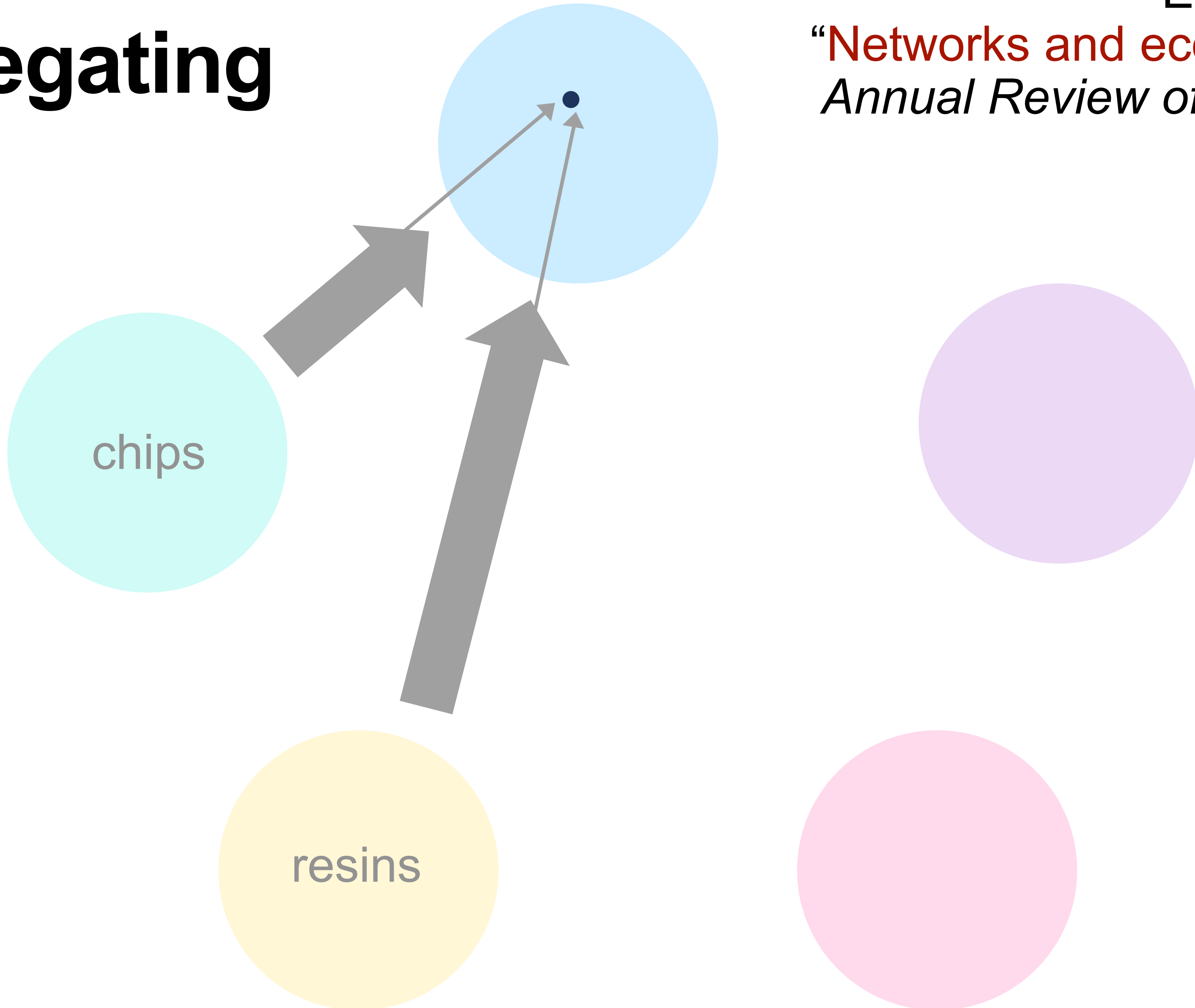
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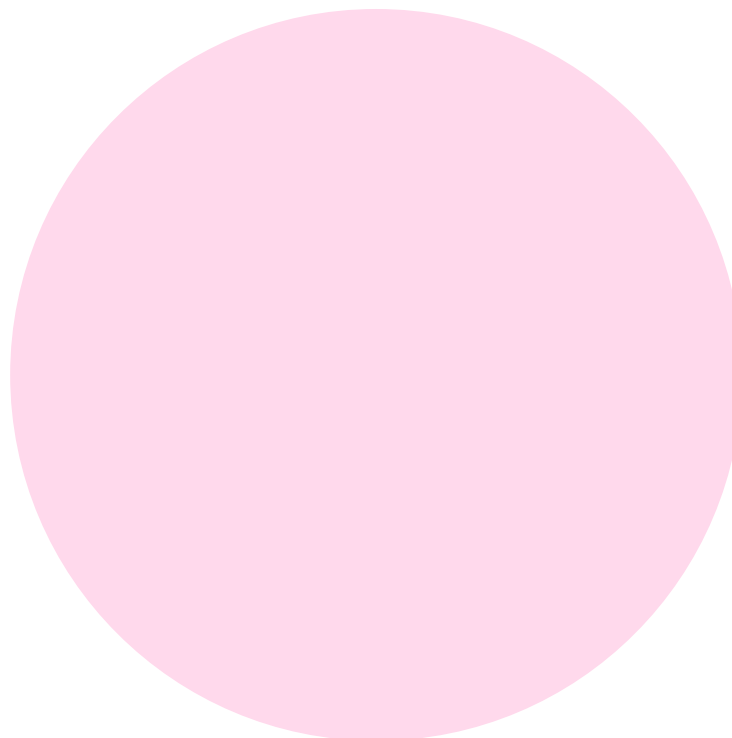
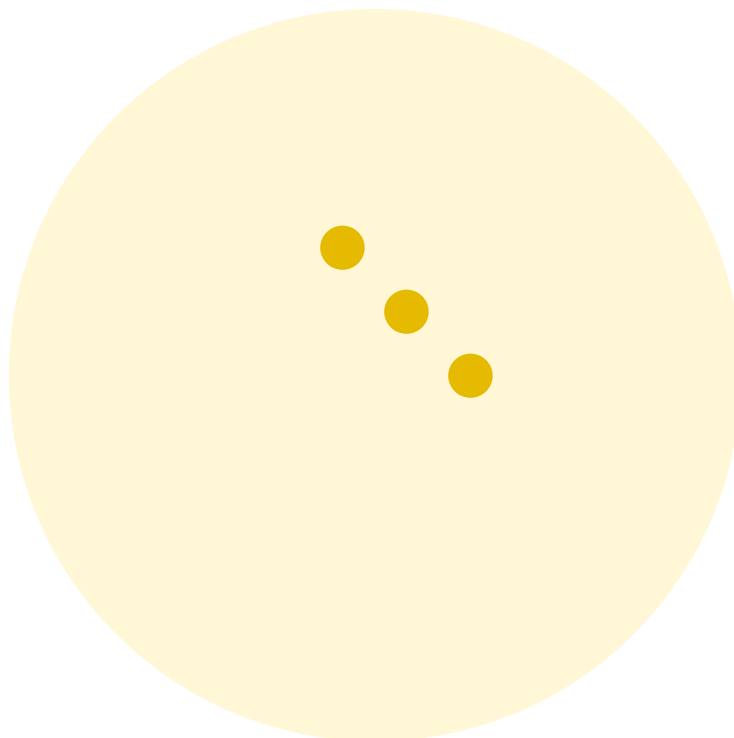
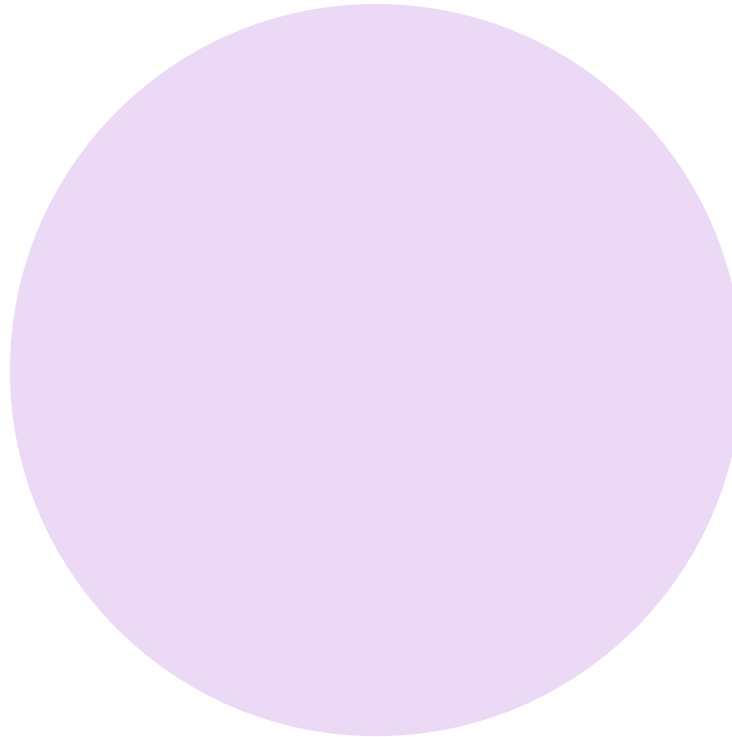
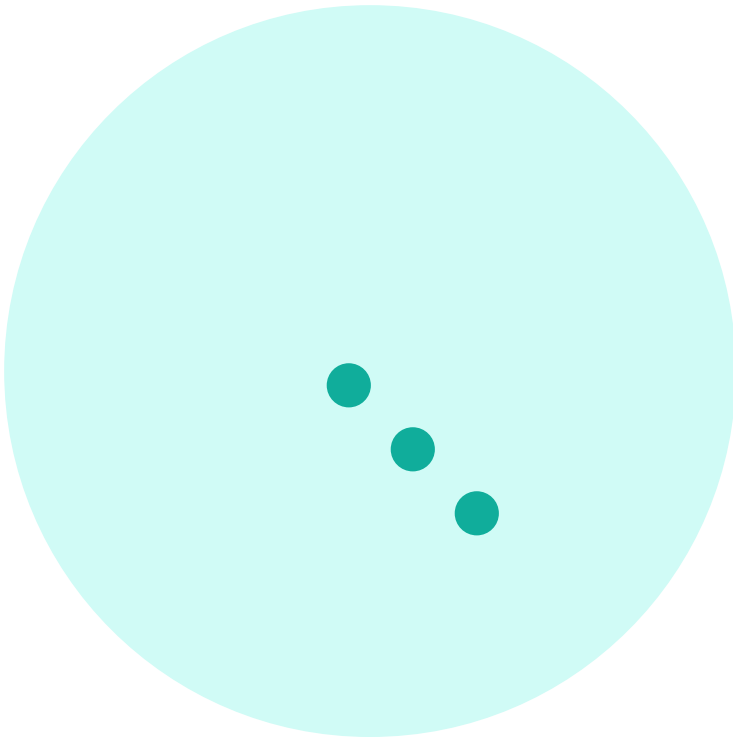
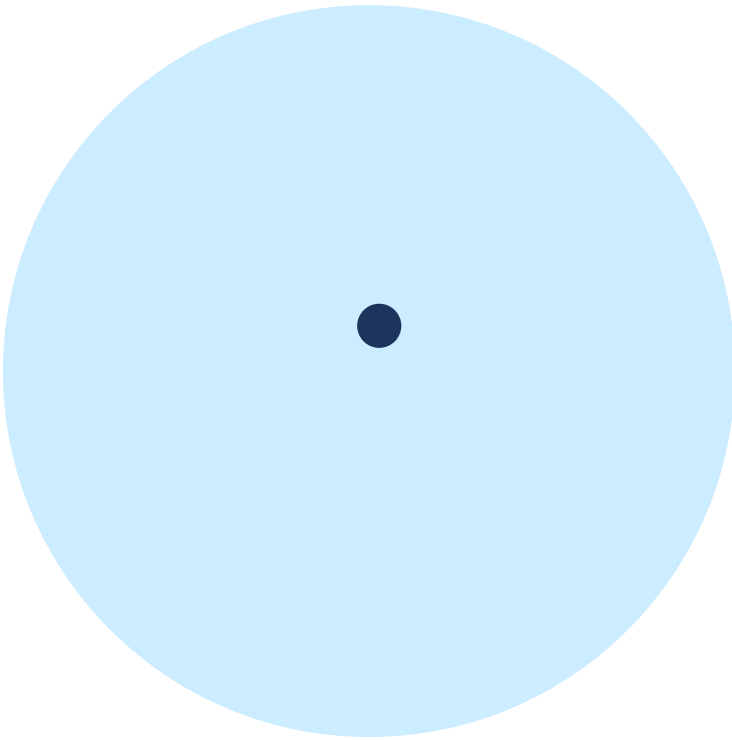
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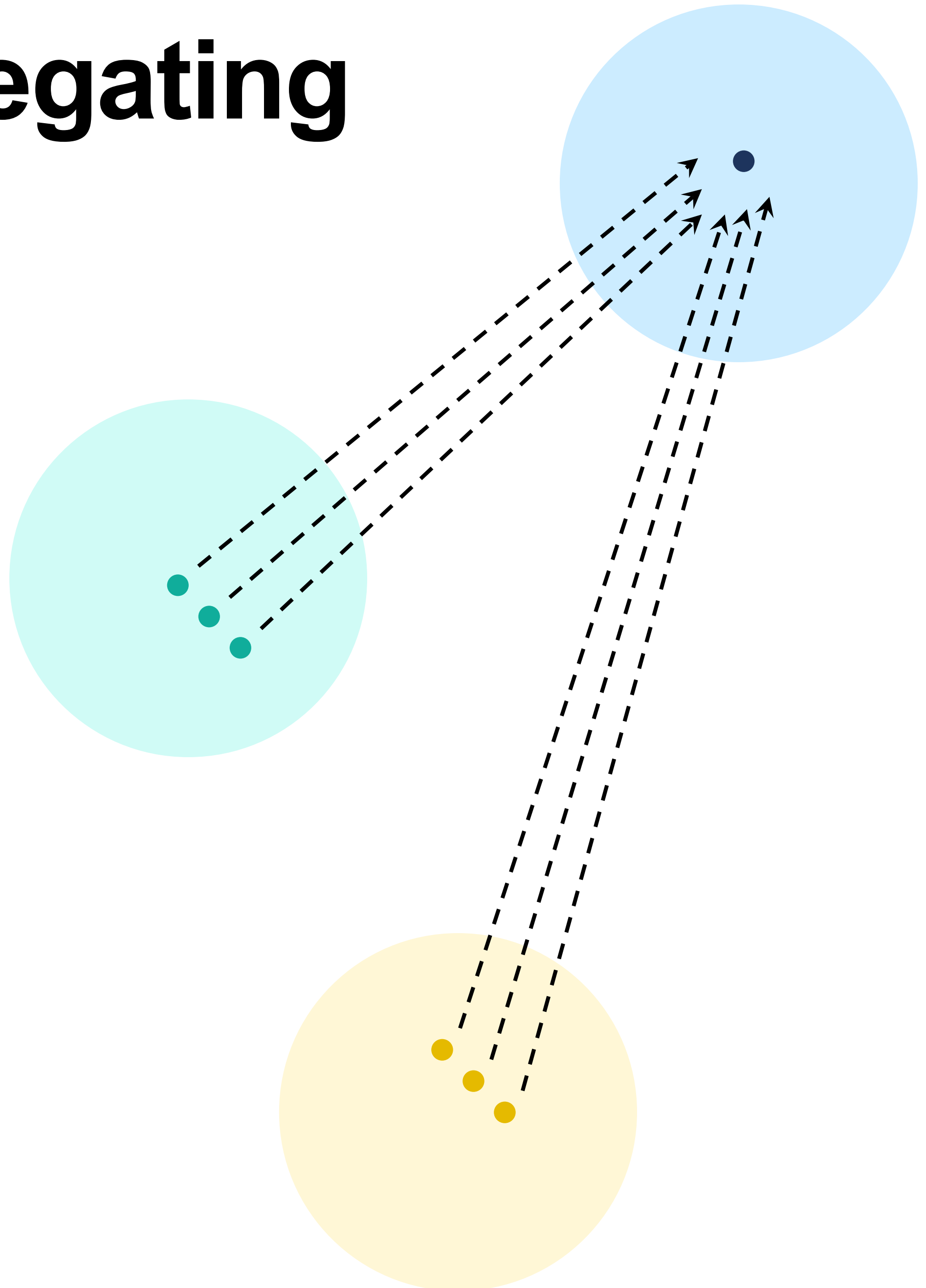


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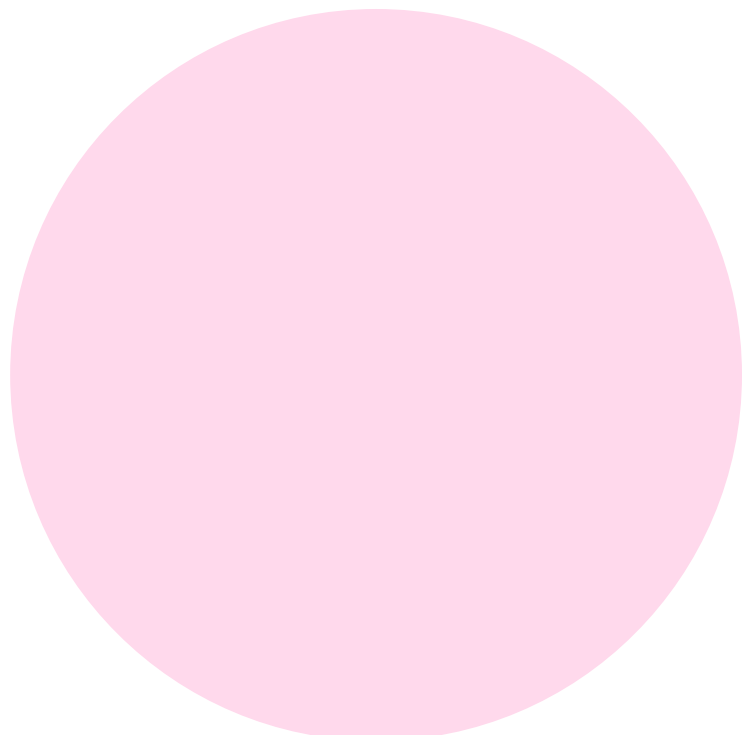
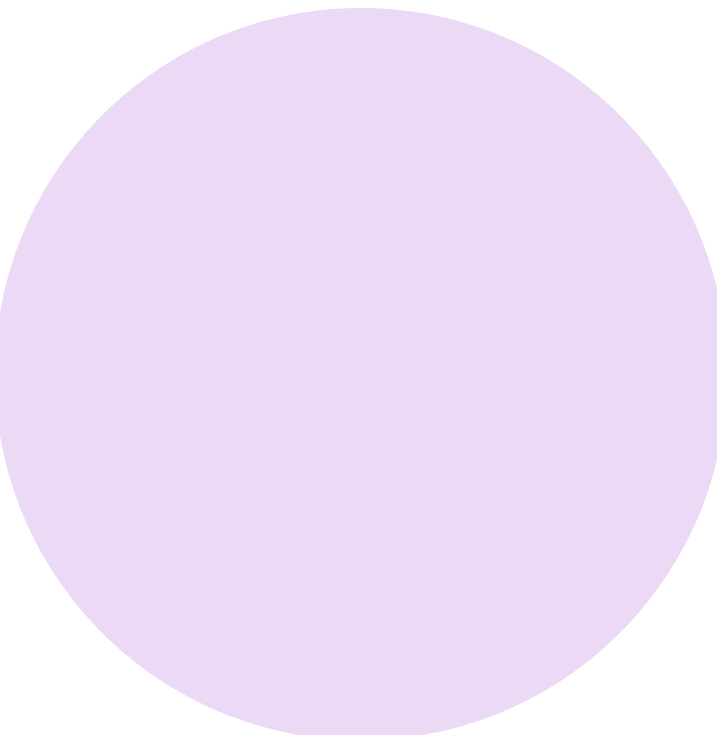
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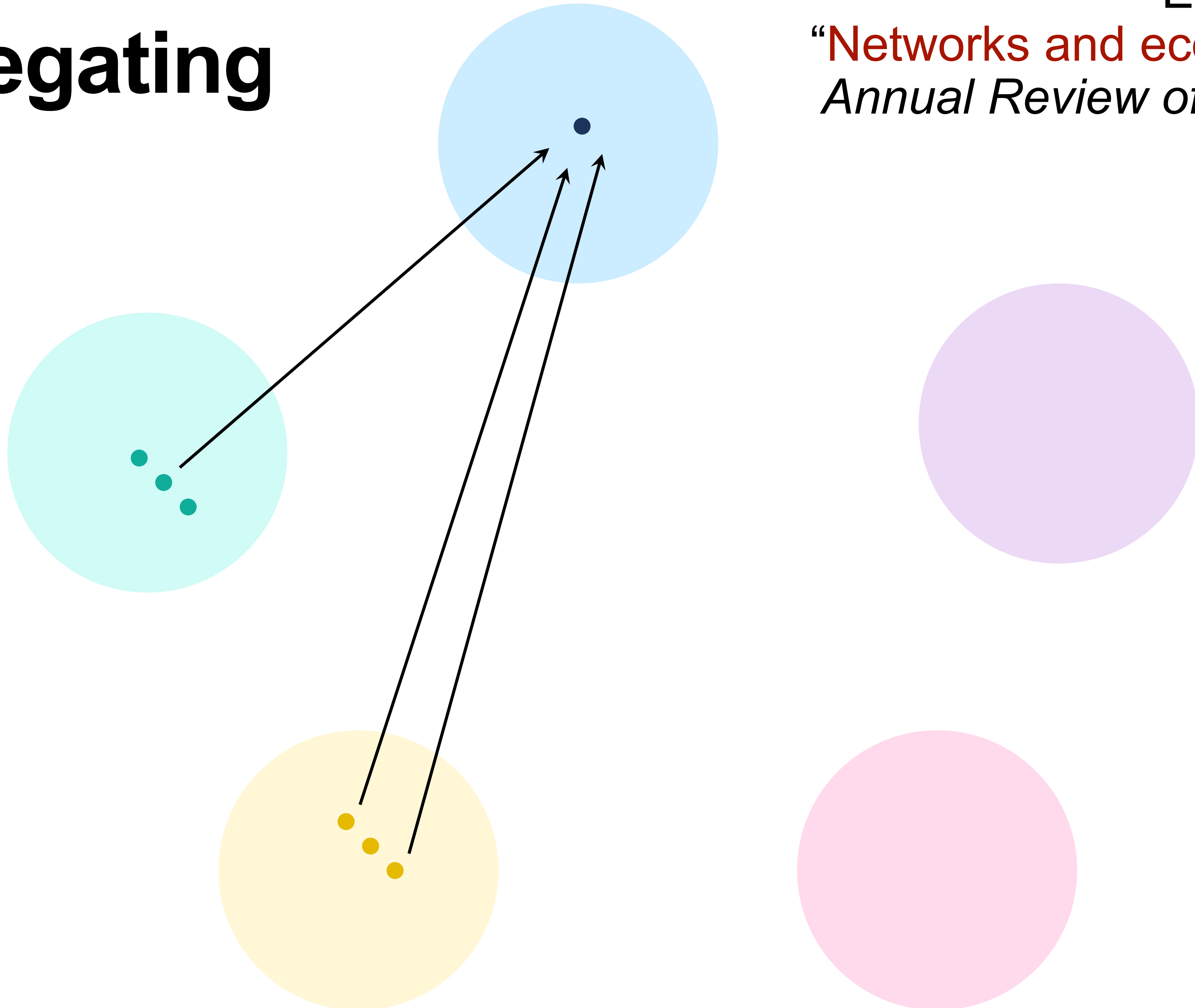


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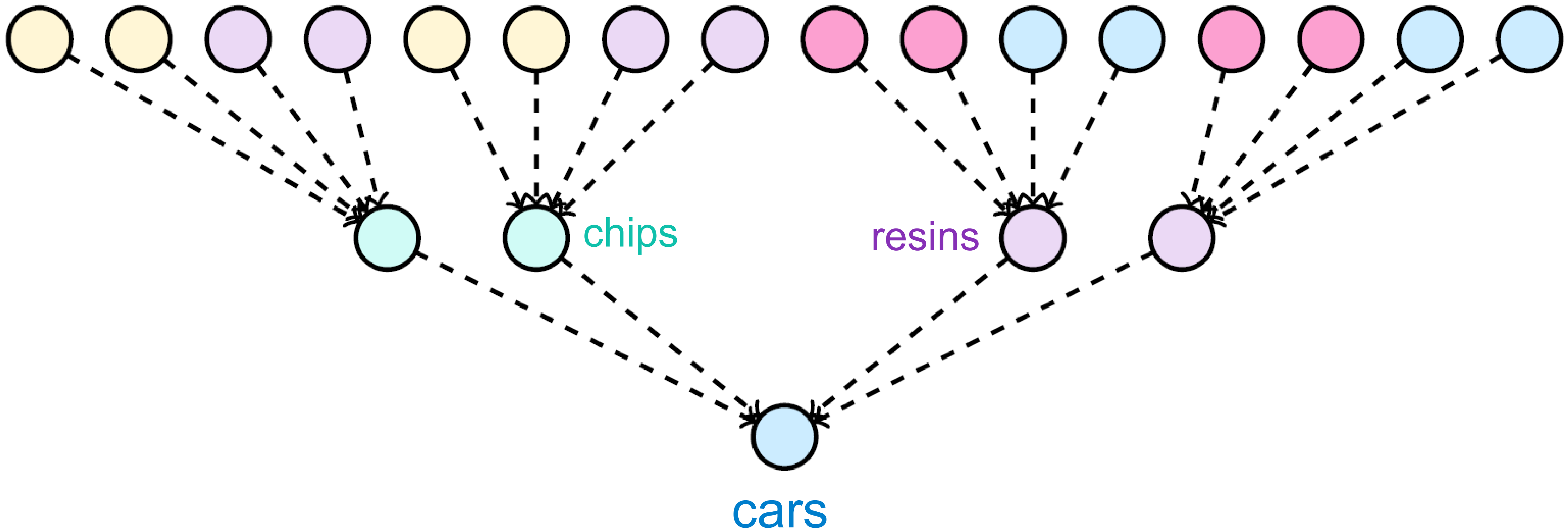
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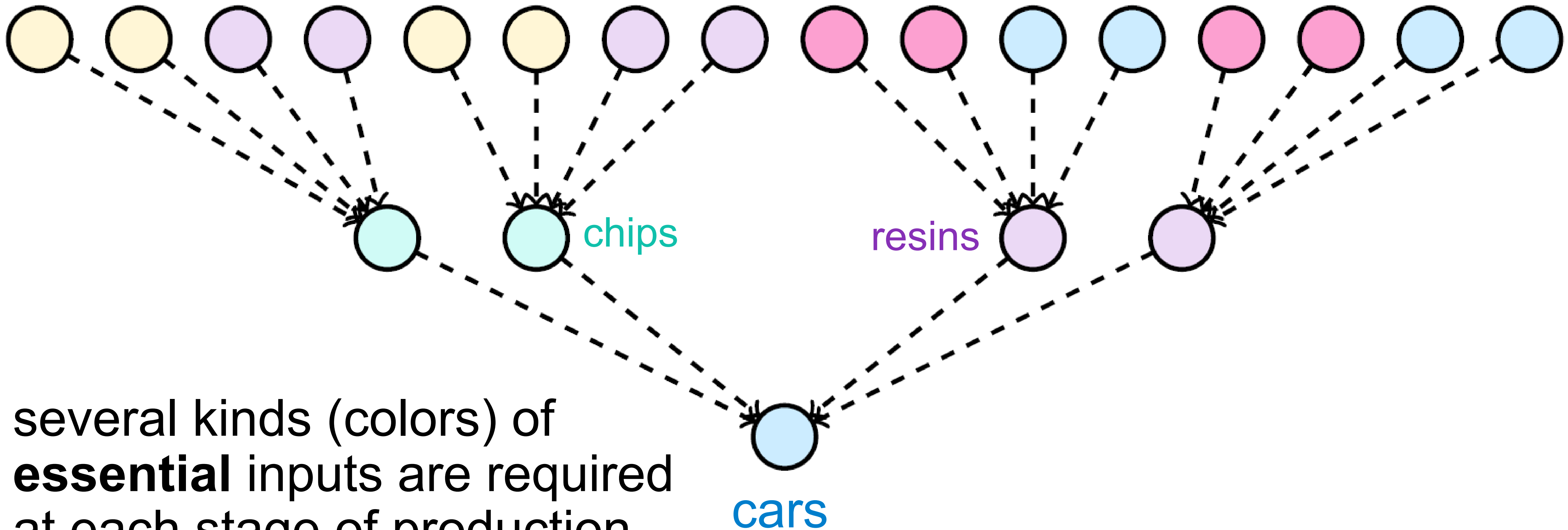
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I'll call this a *supply network*



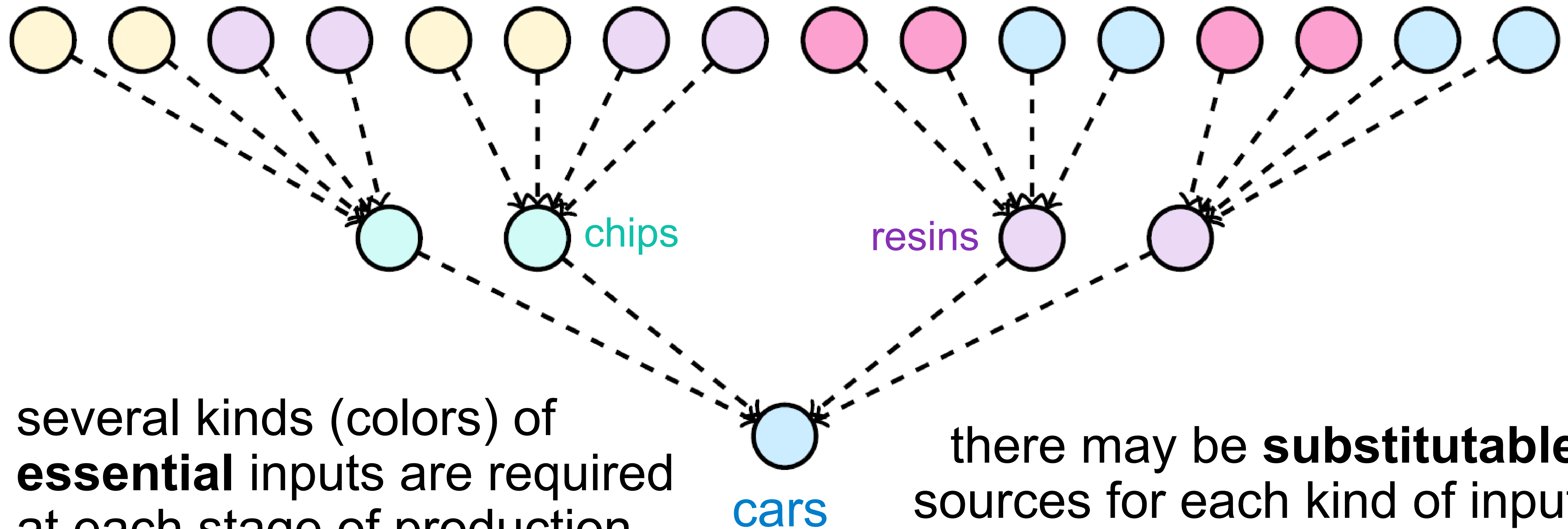
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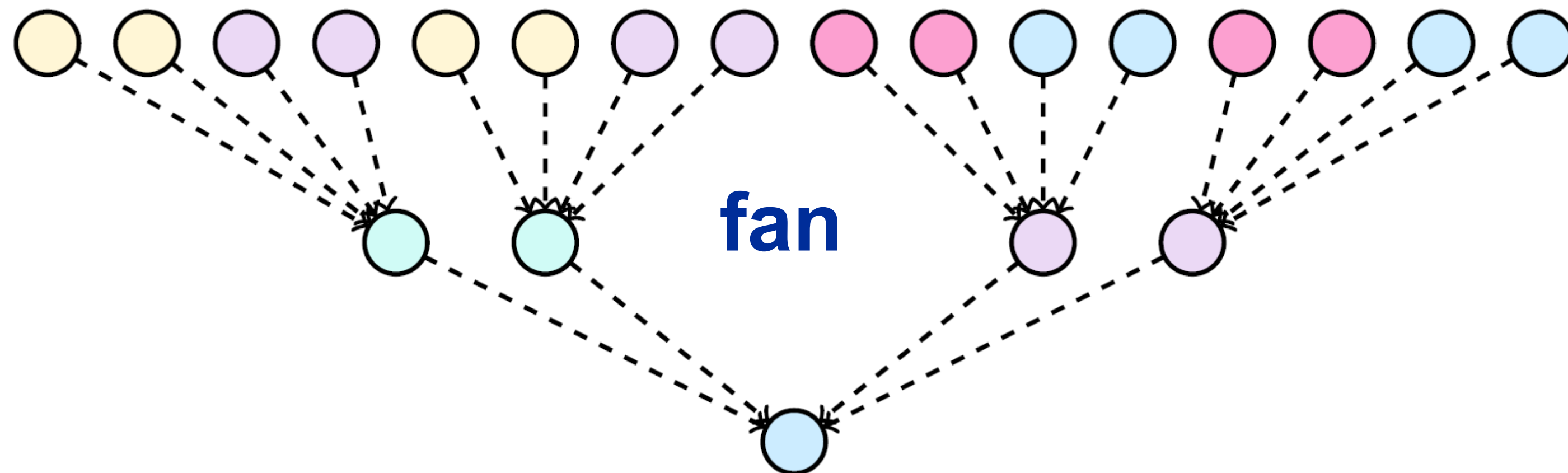
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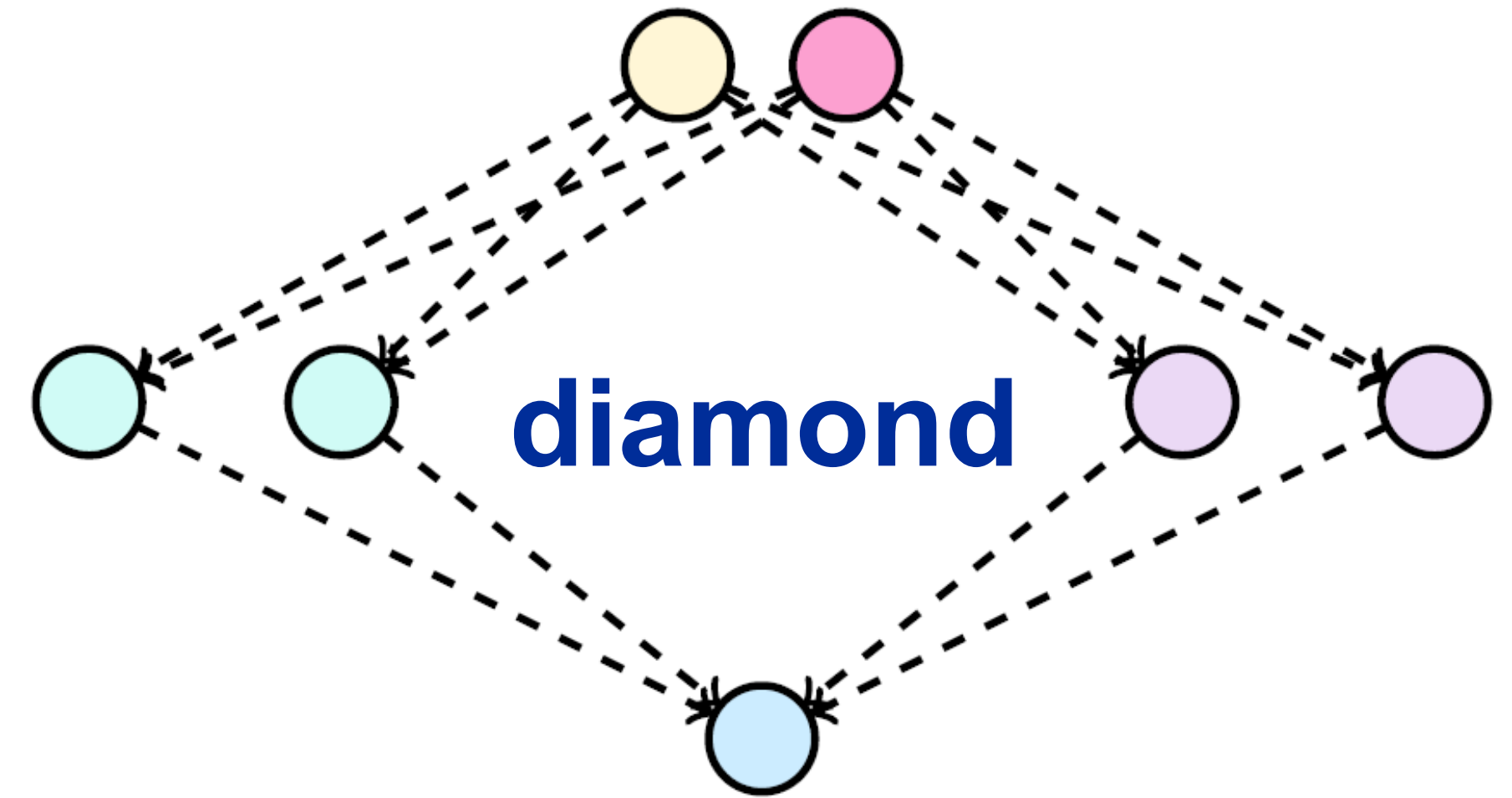
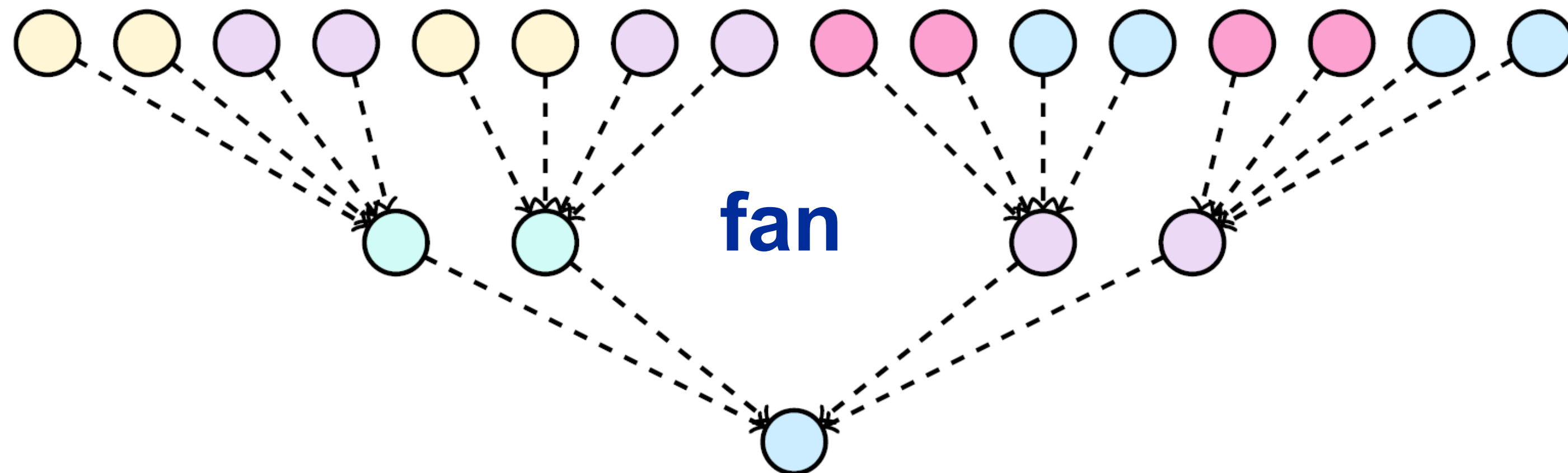
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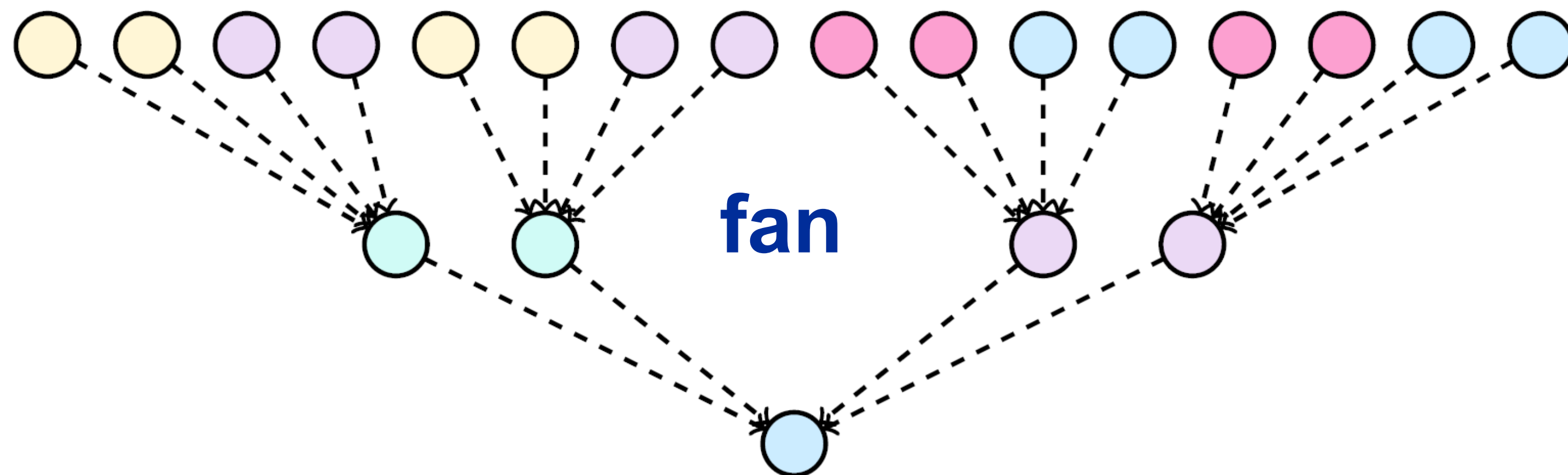
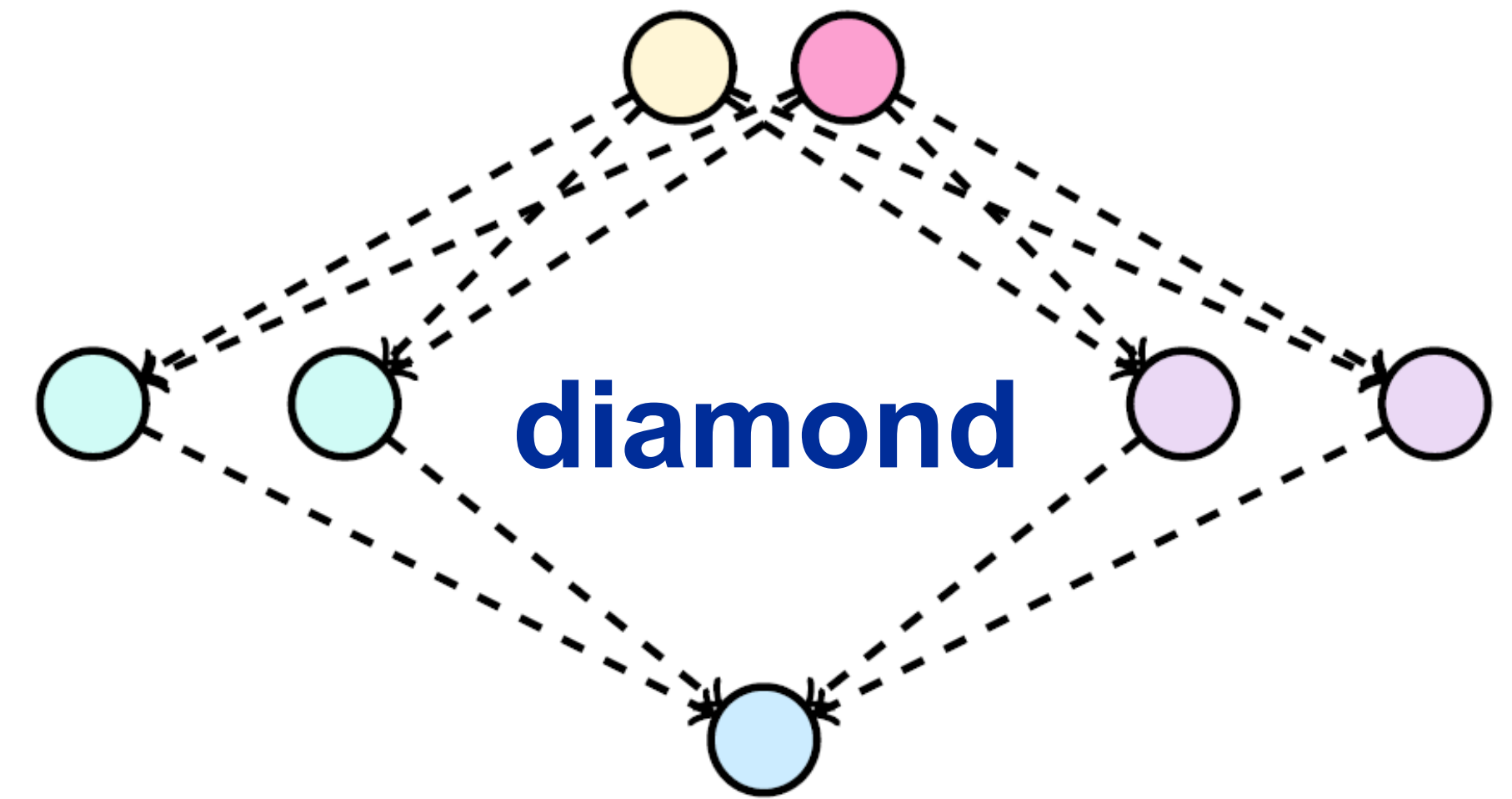
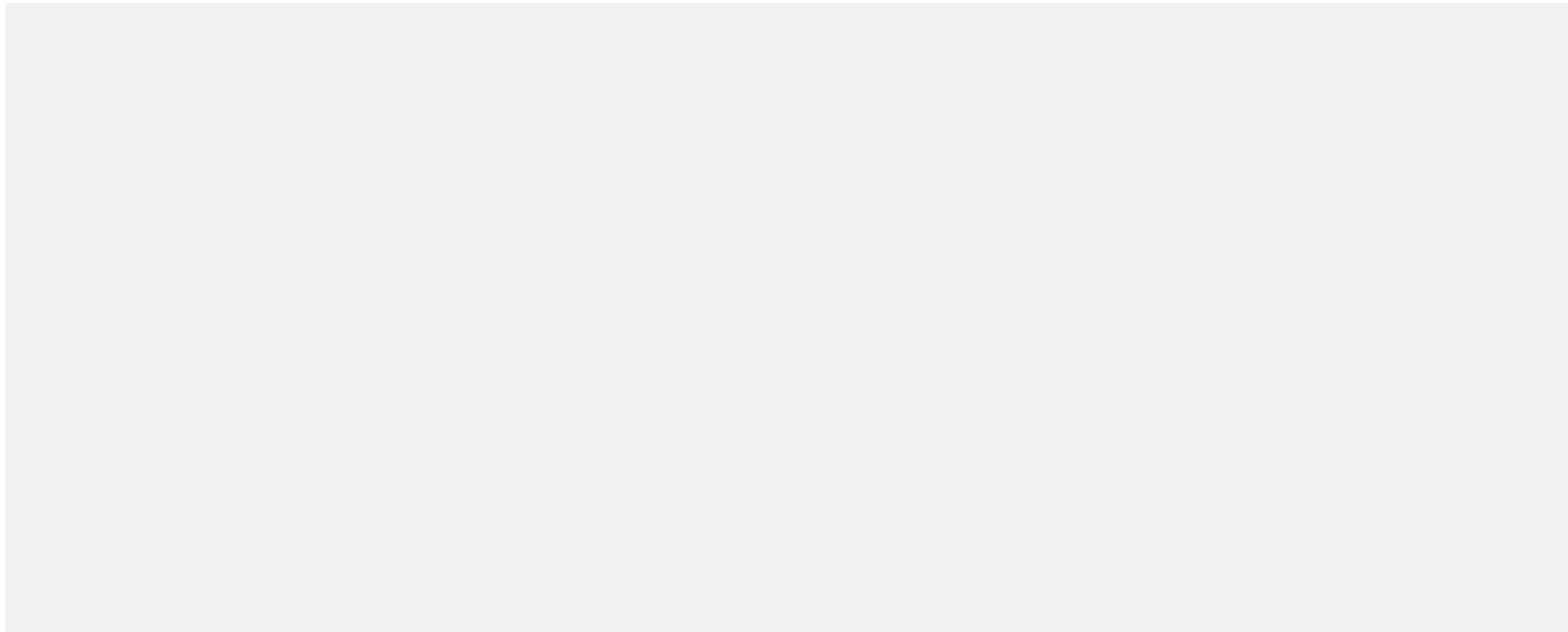
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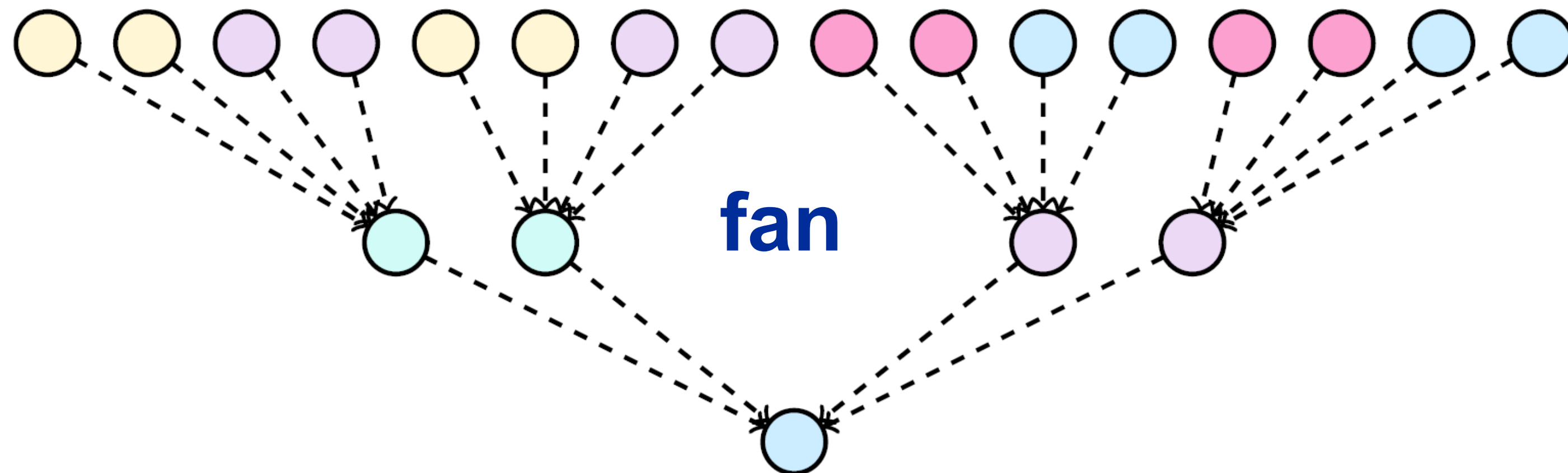
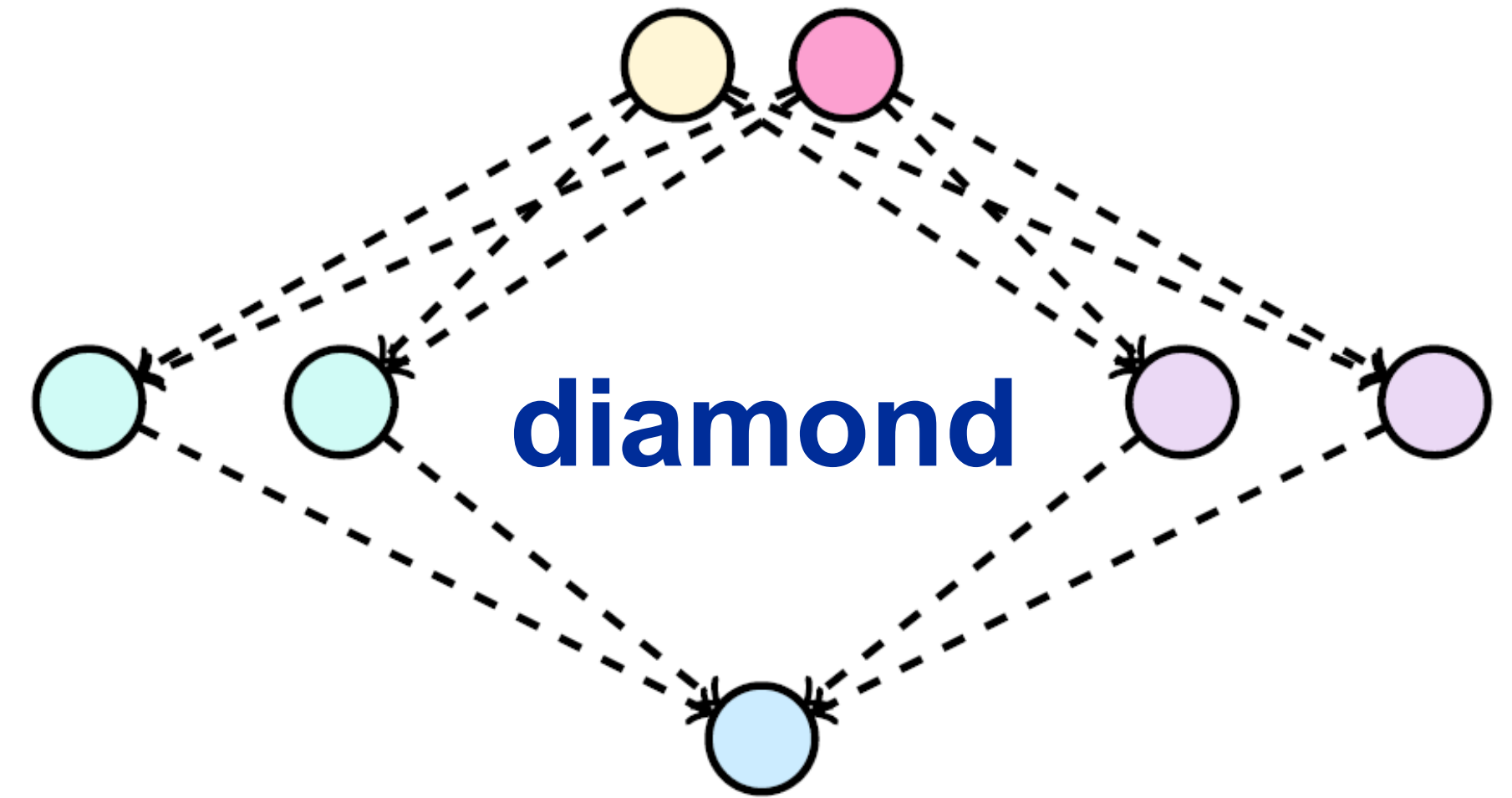
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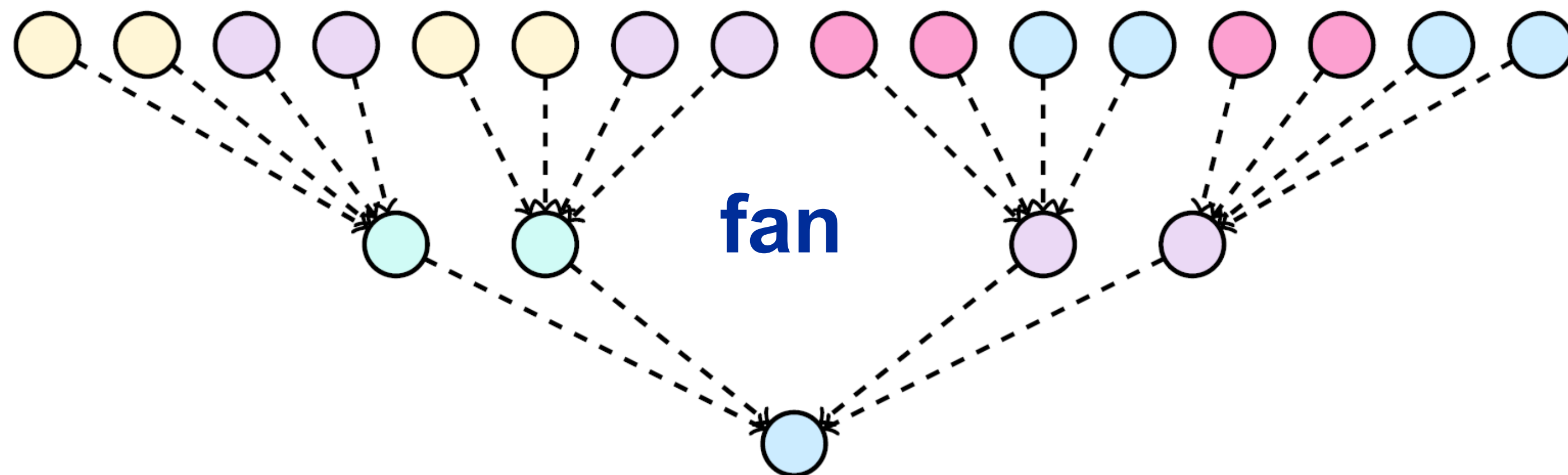
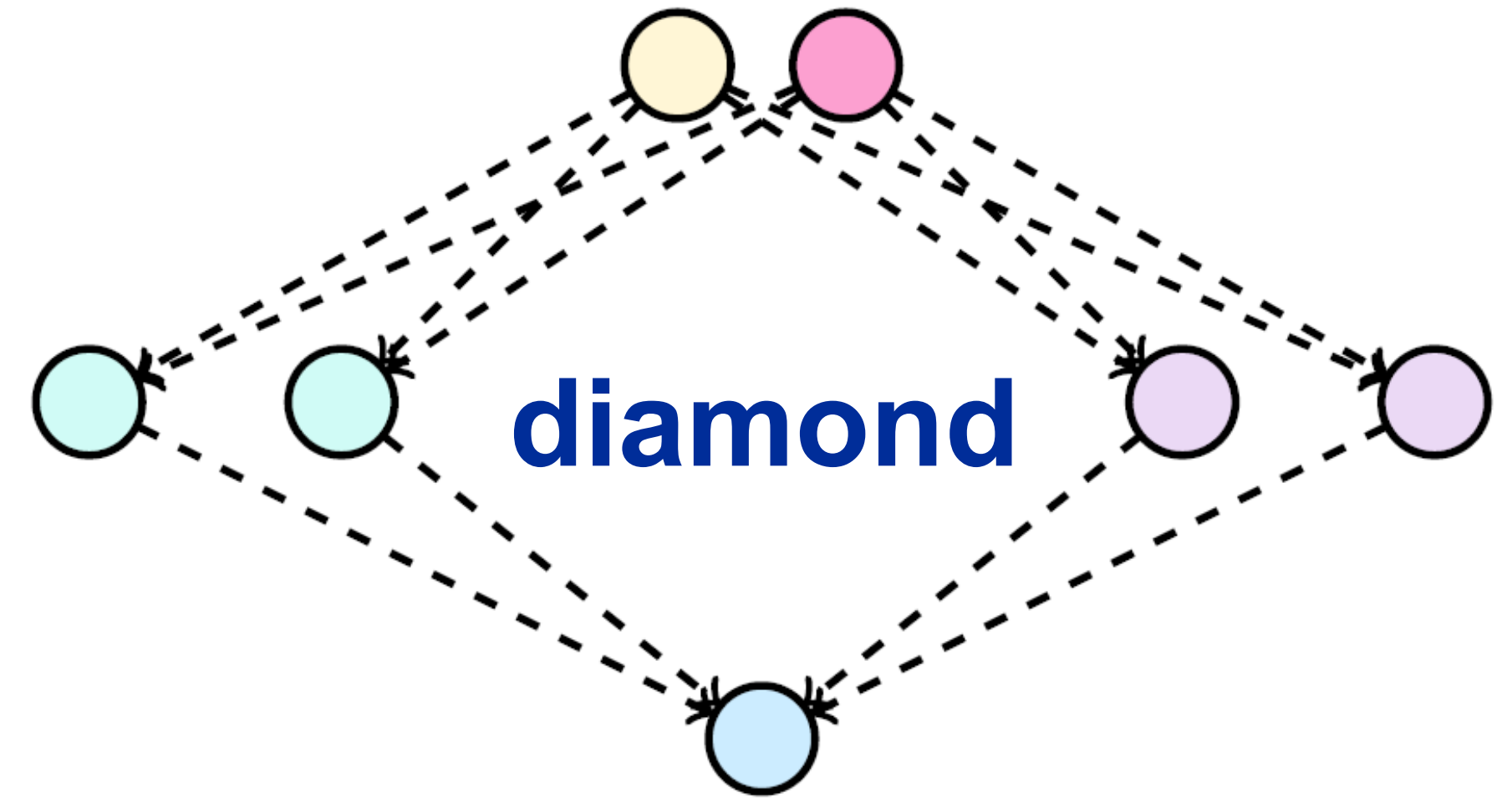


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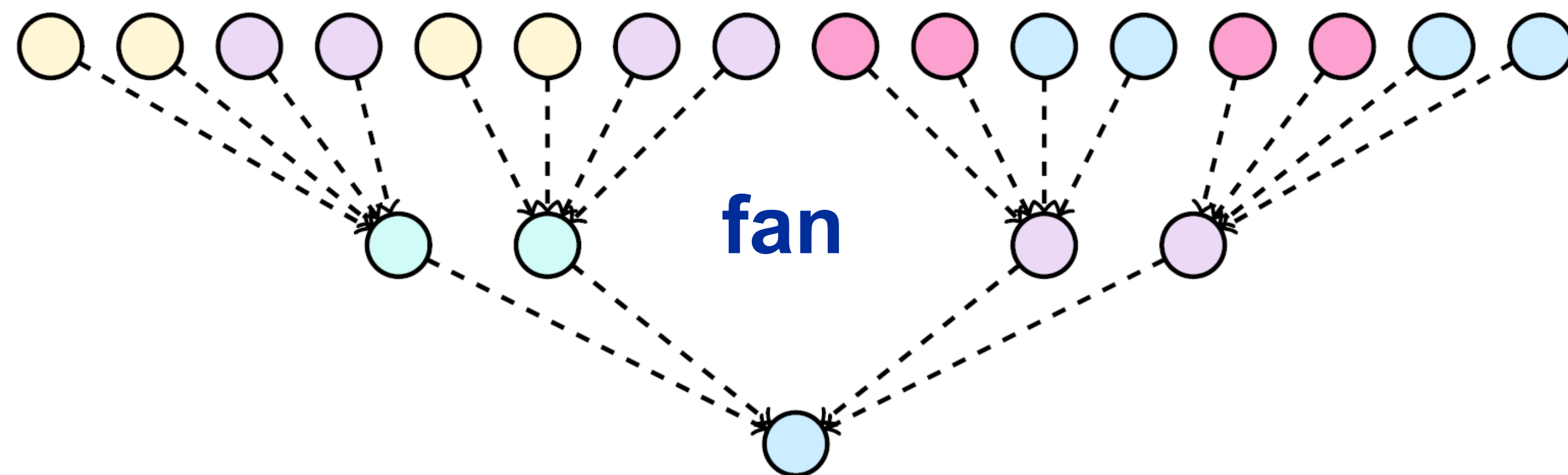
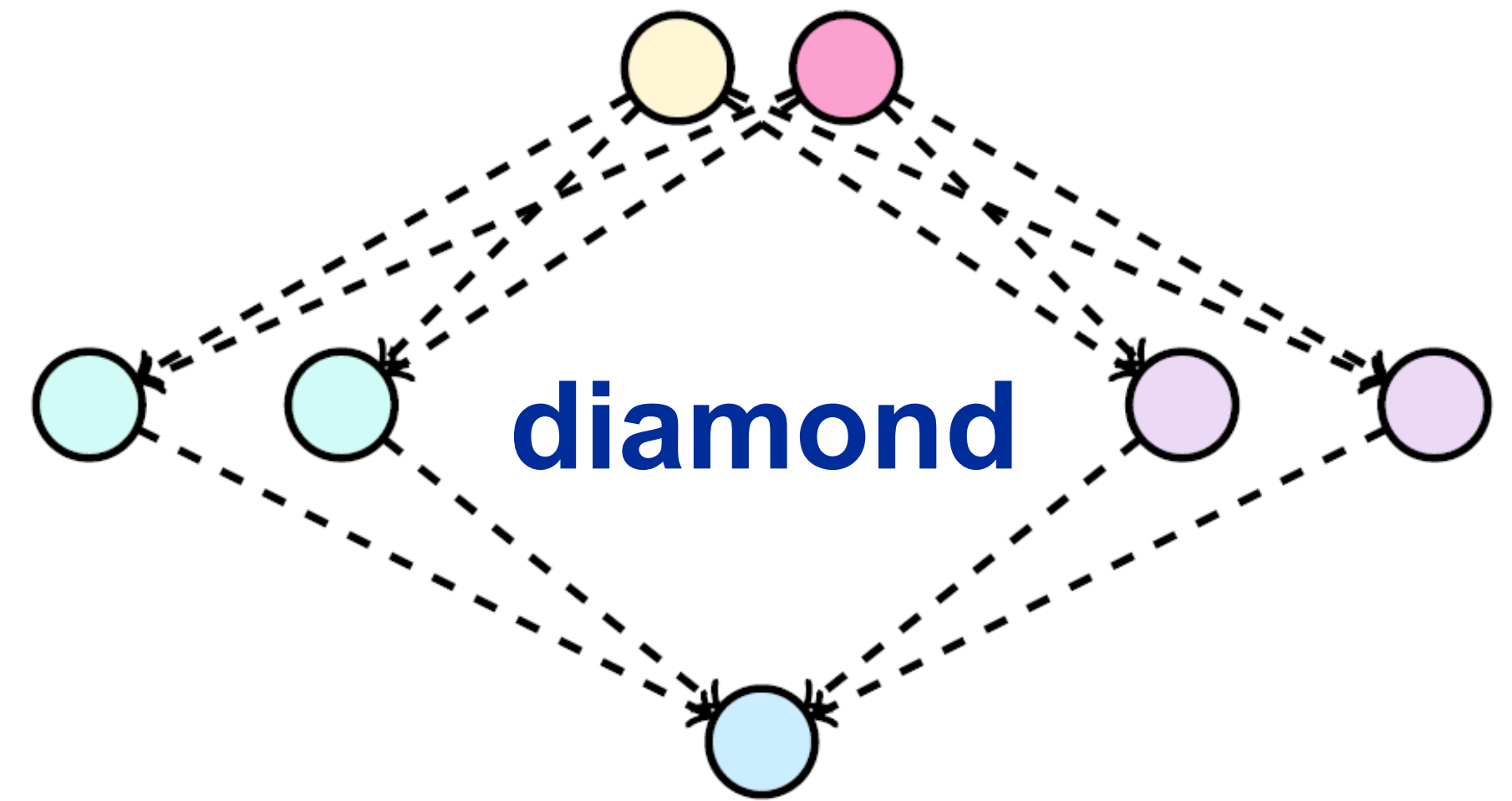
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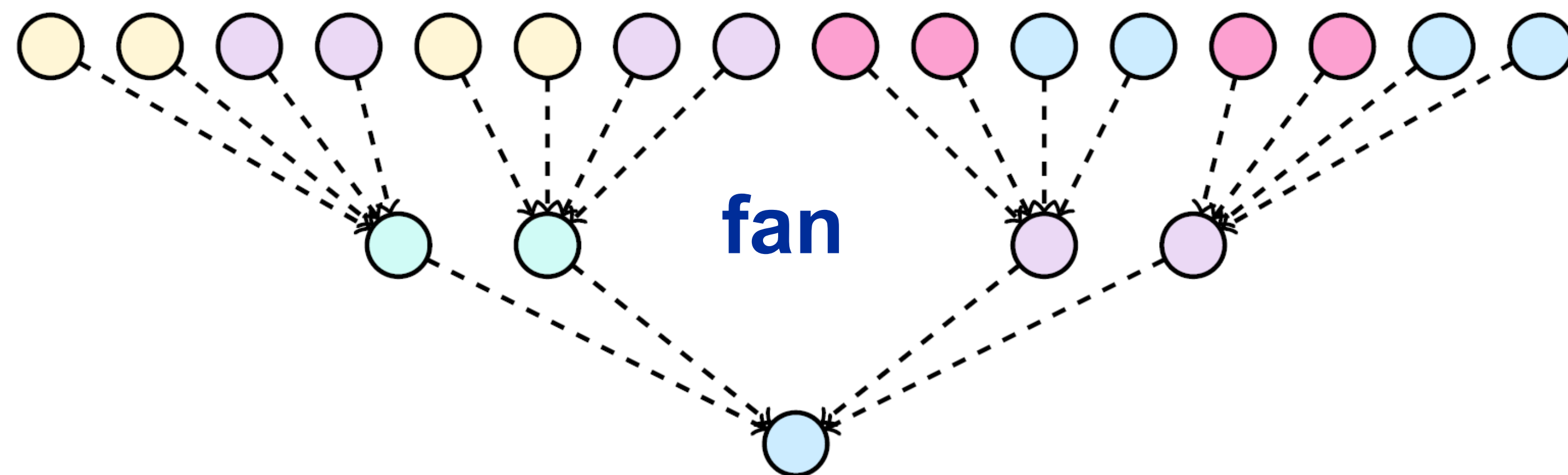
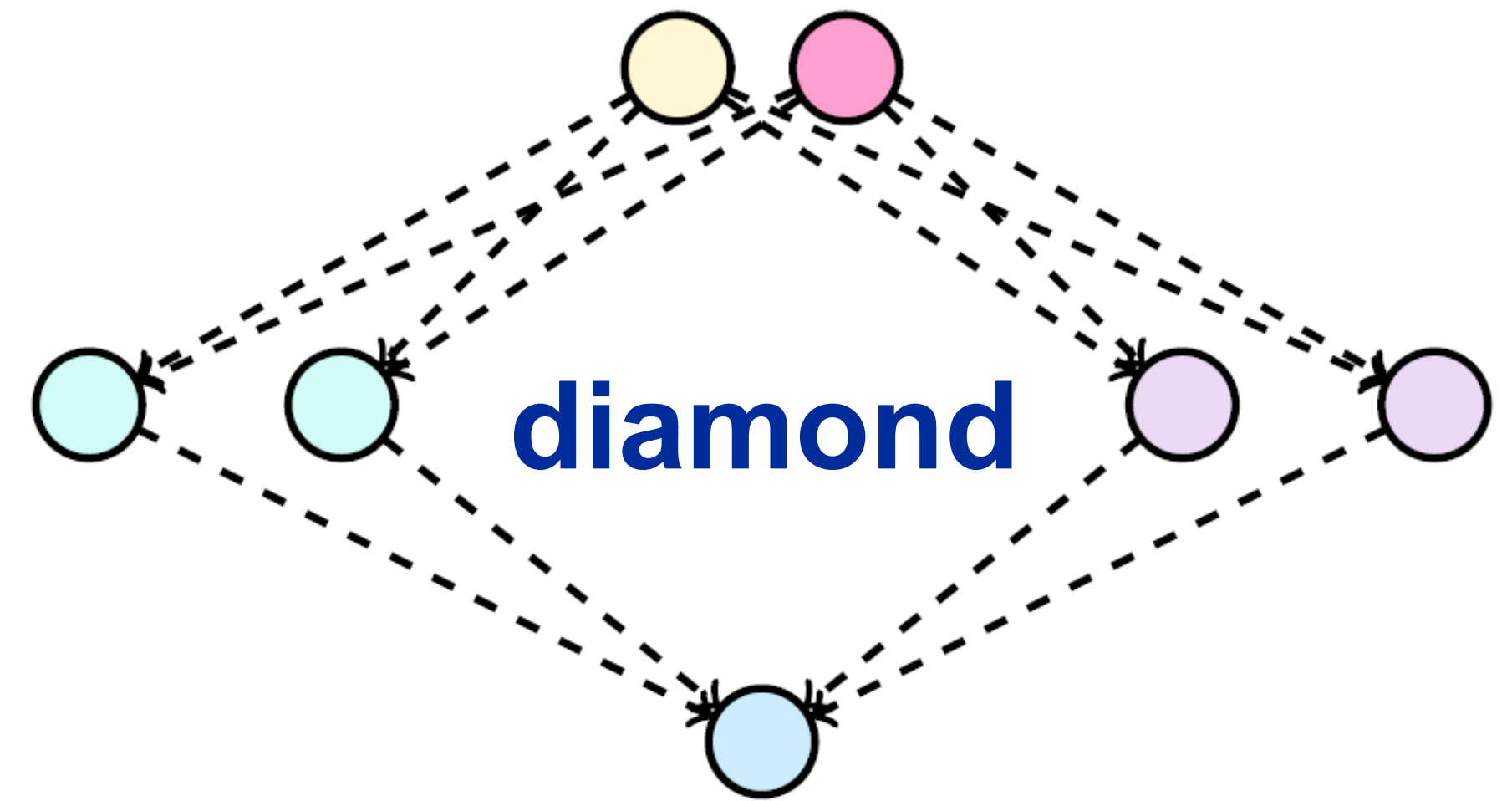
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What are the distributions of shocks? (To nodes? To links?)

*Thoughtful modeling of **shock** structure needs to be combined with “exposure mapping.”*

A “new” type of shock

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Congestion at ports, containers in the wrong place. All shipping links likelier to fail.

Takeaways

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Connectome

