



Letting Go of  
Control

Didier Verna

# Letting Go of Control

## Part 1/2

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# Conclusion

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- Our software is *out of control*
- This is only going to get *worse*
- We should be *afraid*
- We should be *ashamed*



# The birth of a baby

A miracle of Nature

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- Darwin: Evolution is far from perfection
- Up to 50% pregnancies lead to spontaneous abortion



# The birth of a baby DOCUMENT

A miracle of DON KNUTH

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- When it doesn't work, you don't really know why
- When it does work, you *really* don't know why

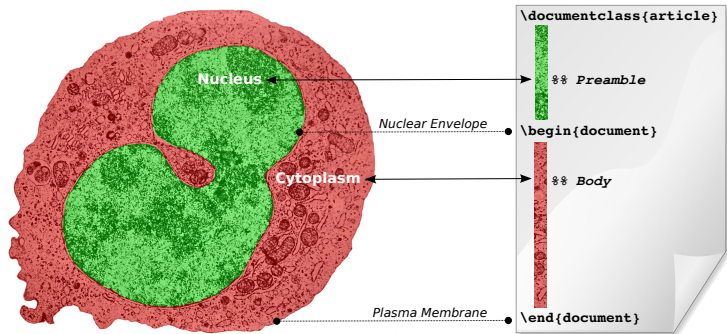


# The $\text{\LaTeX}$ biotope

And the viral propagation of styles

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- $\text{\LaTeX}$  documents as eukaryote cells
- Styles as viral infection with new gene $\text{\TeX}$  material



# Houston, we have a problem. . .

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**Classes, Styles, Conflicts: the biological realm of  $\text{\LaTeX}$ .** *In TUGBoat 31:2, proceedings of TUG 2010, the  $\text{\TeX}$  Users Group Conference, San Francisco, July 2010.*



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- $\text{\LaTeX}$  is a mess
- Open Source software is a mess
- Proprietary software's gotta be a mess too



## Intermediate conclusion

- Darwin / Jacob: Nature is a *tinkerer*
- Alon: the tinkerer as an engineer
- Verna: the engineer as a tinkerer





## Intermediate conclusion

- Darwin / Jacob: Nature is a *tinkerer*
- Alon: the tinkerer as an engineer
- Verna: the engineer as a tinkerer

**We should be ashamed!**



# End of Part 1

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Stephanie Forrest:

*“As programmers, we like to think of software as the product of our intelligent design, carefully crafted to meet well-specified goals. In reality, software evolves inadvertently through the actions of many individual programmers, often leading to unanticipated consequences. Large complex software systems are subject to constraints similar to those faced by evolving biological systems, and we have much to gain by viewing software through the lens of evolutionary biology.”*