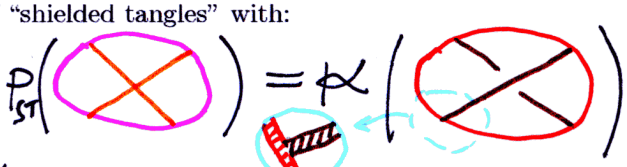
A Very Non-Planar Very Planar Algebra

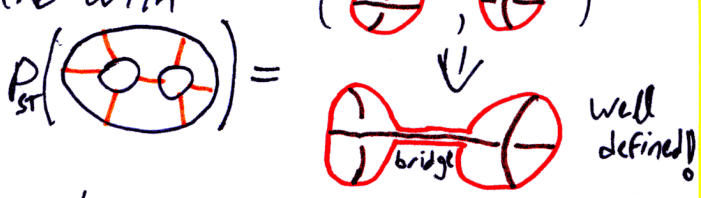
(old work with Dylan Thurston)

Theorem. There exists a skeletal (very) planar algebra of "shielded tangles" with:



(red and brown are always "knottable")

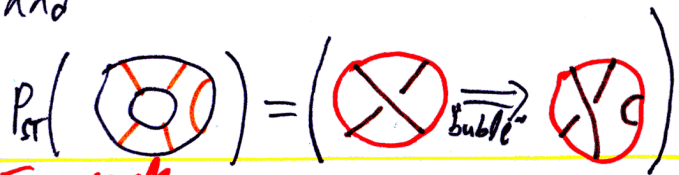
and with



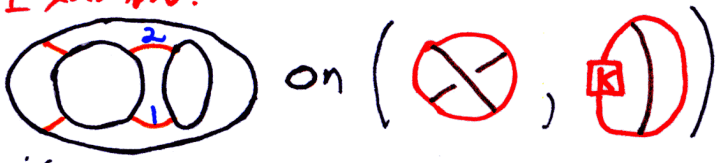
and



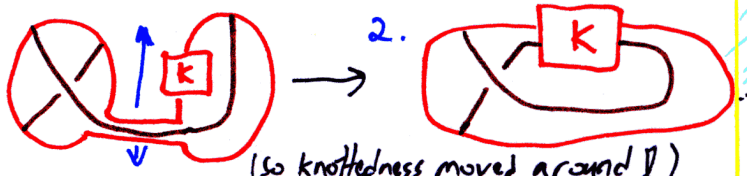
and



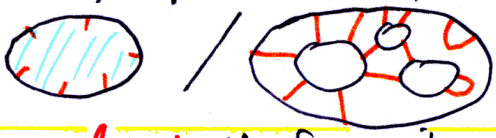
Example.



is



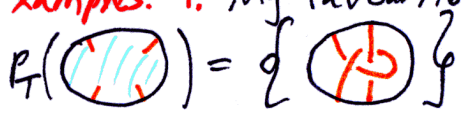
Definition. A planar algebra has spaces / operations indexed by



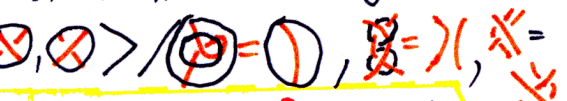
(with obvious compatibilities between ops.)

Light entertainment

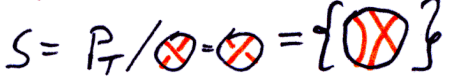
Examples. 1. My favourite – tangles:



makes Reidemeister's theorem into gens/rels:

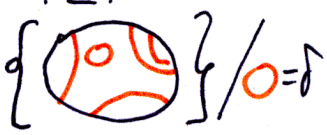


2. "skeletons":

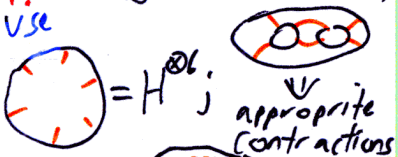


Def. A skeletal planar algebra is "fibred" over S

3. TL:



4. Tensor: choose H, use



All make sense in higher genus!



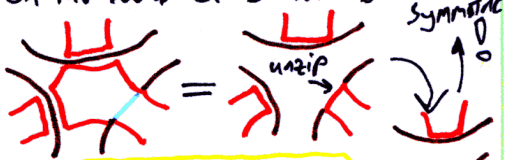


Not very planar

Proof. key point:



on the level of skeletons –



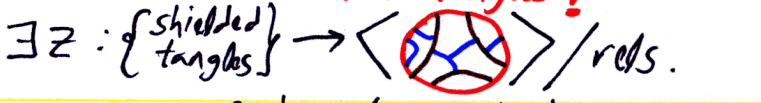
....and trees are never knotted

The deeper connections

Facts. 1. There is no planar-algebra-structure-respecting universal finite type invariant



2. But there is one for shielded tangles!



3. This Z provides a Reidemeister context for the Kontsevich integral!

4. A cousin of Z is equivalent to the Drinfel'd theory of associators.

Dream – A similar story will be told for "virtual knots", and will provide a topological interpretation of a "universal quantum group". See .../Talks/Hanoi-0708

The dreams

Some propaganda

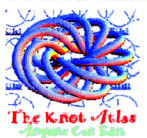
1. Slides/blame/powerpoint are evil!
   * Can you always sync with the speaker?
   * Don't you want to look back at pictures long gone?
2. Handouts are cool!

Everything's always in front of you, even when you go home.



"God created the knots, all else in topology is the work of mortals"

Leopold Kronecker (modified)



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Edit!