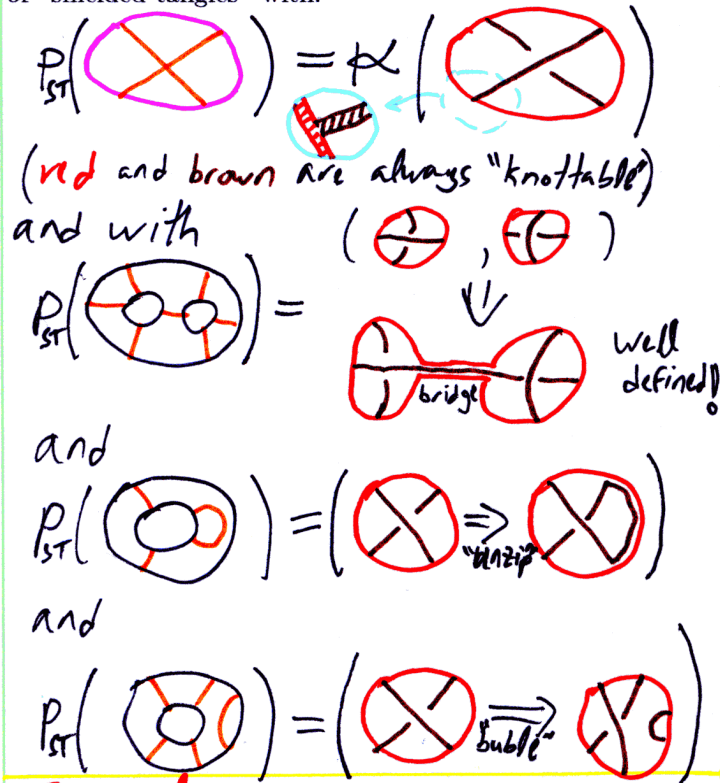


Theorem. There exists a skeletal (very) planar algebra of "shielded tangles" with:



Definition. A planar algebra has spaces / operations indexed by $\text{Light entertainment}$ (with obvious compatibility between ops.)

Examples. 1. My favourite - tangles:

$$P_T(\text{red/brown tangle}) = \{ \text{red/brown tangle} \}$$

makes Reidemeister's Theorem into gens/rels:

$$P_T = \langle \text{red/brown tangle} \rangle / \text{red/brown tangle} = 1, \text{red/brown tangle} = \text{red/brown tangle}, \text{red/brown tangle} = \text{red/brown tangle}$$

2. "skeletons": **Def.** A skeletal planar algebra is "fibred" over S

$$S = P_T / \text{red/brown tangle} = \{ \text{red/brown tangle} \}$$

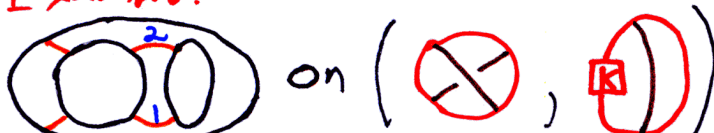
3. TL:

$$\{ \text{red/brown tangle} \} / 0 = 1$$

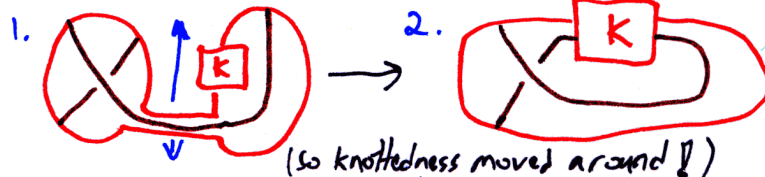
4. Tensor: choose H , use

$$\text{red/brown tangle} = H^{\otimes k}; \text{appropriate contractions}$$

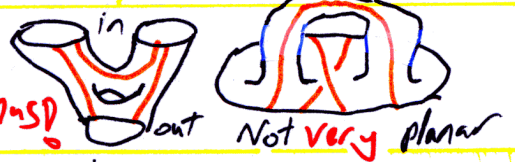
Example.



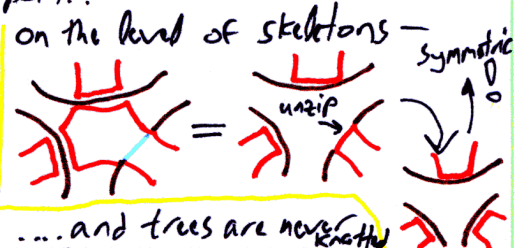
is



All make sense in higher genus!



PROOF. key point:



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

$$\{ \text{ordinary tangles} \} \rightarrow \langle \text{red/brown tangle} \rangle / \text{4T, STU, AS, IHX}$$

2. But there is one for shielded tangles!

$$\exists Z : \{ \text{shielded tangles} \} \rightarrow \langle \text{red/brown tangle} \rangle / \text{rels.}$$

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

4. A cousin of Z is equivalent to the Drinfeld 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

1. Slides/beamers/Some propaganda 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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