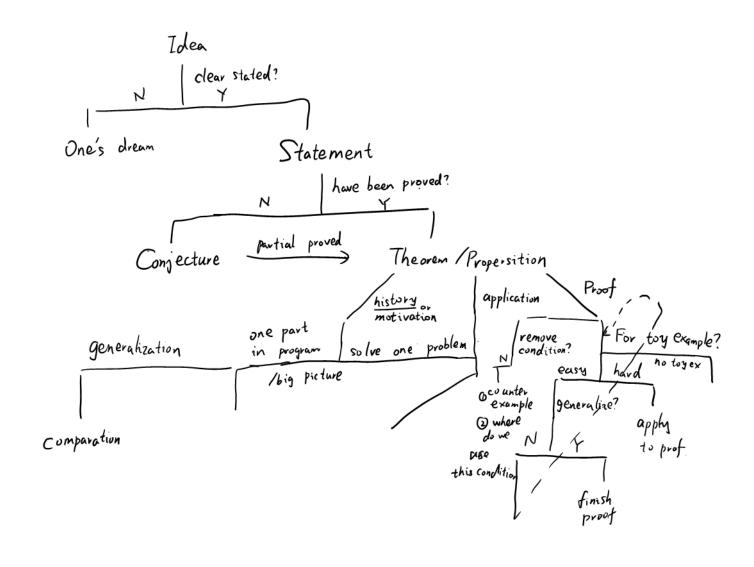


词典的重要性,词典的完备性例子: 把几何对象翻译成代数对象(交换代数申屠老师的词典) 把新的对象翻译成旧对象(Grothendieck topology...)



从Grothendieck拓扑个是拓扑谈起数学概念的命名往往带有无意的误导性。同名不同义: 平坦(flat), seperated scheme/map and seperated presheaf 同源不同义: reduced & reducible 约化的不可约概形

同名多类(支持变量多个类型): 拓扑空间的基本群,根系的基本群,概形的étale基本群

affine scheme, affine map, affine scheme over \$S\$: 是affine scheme + over \$S\$还是scheme over \$S\$+ affine map? exact functor(of abelian category/triangulated category)

## 历史遗留问题:

presheaf, seperated presheaf, sheaf(我们按照现代观点,或者说Vakil的note) quasi-compact and compact(代数几何+Class AT2使用quasi-compact,日常用compact)

概念的含混性: Borel-Moore同调是同调吗? 紧支上同调是上同调吗?推广而非限制: Grothendieck拓扑和étale拓扑都不是拓扑

含混义: descent

## 找大致知道的同调上同调:

Borel-Moore homology

compact supported cohomology

de Rham cohomology

cellular (co)homology

simplicial (co)homology

singular (co)homology

## 我大致不知道的同调上同调:

Cêch cohomology

sheaf cohomology

Étale cohomology

Galois cohomology

Group (co)homology

Hochchild (co)homology

l-adic cohomology

intersection (co)homology

crystalline cohomology

elliptic cohomology

flat cohomology

infinitesimal cohomology

代数拓扑需要学啥?

Poincaré duality

推出和拉回

Lefschetz trace formula

Lefschetz hyperplane theorem

Ex. of Sheaves on Xét

Let G. finite abelian group

O  $G_{pre}$ :

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The Homelyx (-,  $G_{pre}$ ) is a sheaf over Xét  $G_{pre}$   $G_{pre}$   $G_{pre}$  is a sheaf over Xét  $G_{pre}$   $G_{pre}$   $G_{pre}$ 

3 reduced to  $G_p = G$  for  $\forall p \in X$  i.e. lim Homsehlx (U, TIX) = G U-x ét + Ifp