```
hanoi_sol2_ala_generalPROGcomp  THM

⊢  ∀n:ℕ⁺ , p,q:Peg.
|  p ≠ q
|  ⇒
|  (∀a:ℤ.
|   HanoiSTD(n disks; from: p; to: q; indexing from: a)
|   =
|   (HanoiSTD(n-1 disks; from: p; to: otherPeg(p; q);
|             indexing from: a)
|    /m,s1.
|    HanoiSTD(n-1 disks; from: otherPeg(p; q); to: q; indexing from: m
|             +1)
|    /z,s2. <z,HanoiHelper(n; s1; λi.p; s2; λi.q)/r1,r2. r1 @(m) r2>))
| by Auto
|
1. n : ℕ⁺
2. p : Peg
3. q : Peg
4. p ≠ q
5. a : ℤ
⊢  HanoiSTD(n disks; from: p; to: q; indexing from: a)
|  =
|  (HanoiSTD(n-1 disks; from: p; to: otherPeg(p; q); indexing from: a)
|   /m,s1.
|   HanoiSTD(n-1 disks; from: otherPeg(p; q); to: q; indexing from: m
|            +1)
|   /z,s2. <z,HanoiHelper(n; s1; λi.p; s2; λi.q)/r1,r2. r1 @(m) r2>)
| by Compute
|      ⌈HanoiSTD(n disks; from: p; to: q; indexing from: a)⌉
|      *⇒
|      if n=₂0→ <a,λx,i. whatever>
|      else HanoiSTD(n-1 disks; from: p; to: otherPeg(p; q);
|                    indexing from: a)
|           /m,s1.
|           HanoiSTD(n-1 disks; from: otherPeg(p; q); to: q;
|                    indexing from: m+1)
|           /z,s2.
|           <z
|           ,HanoiHelper(n; s1; λi.p; s2; λi.q)/r1,r2. r1 @(m) r2> fi
|    THEN
|    SplitITE Concl
|
|\
| 6. n ≠ 0
| ⊢  p ≠ otherPeg(p; q)
|   by BackThru:
|      Thm*  ∀x,y:Peg. x ≠ y ⇒ x ≠ otherPeg(x; y)
|      {hanoi_otherpeg_diff3}
|
.\
. 6. n ≠ 0
. 7. m : {a...}
. 8. s1 : {a...m}→{1...n-1}→Peg
. 9. HanoiSTD(n-1 disks; from: p; to: otherPeg(p; q);
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.             indexing from: a)
.    =
.    <m,s1>
. ⊢  otherPeg(p; q) ≠ q
.   by BackThru:
.      Thm*  ∀x,y:Peg. x ≠ y ⇒ otherPeg(x; y) ≠ y
.      {hanoi_otherpeg_diff2}
END
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