**Orthogonal Bijective Dual Commutation**

### **1. The Four Sets**

* **T** = {EI, AT, OG} → These are your **transcendental absolutes**: *Exists, True, Good*.
* **L** = {ID, NC, EM} → These are the **laws of logic**: *Identity, Non-Contradiction, Excluded Middle*.
* **M** = {Σ, B, M} → These are the **modal structures**: *Sign (Σ), Bridge (B), Mind (M)*.
* **O** = {SIGN, BRIDGE, MIND} → These are the **semantic counterparts** of those structures, given in natural form.

So you have two “pairs” of universes — T/L on one side, M/O on the other.

### **2. The Two Core Functions**

* **f : T → L** This maps each transcendental to its corresponding law of logic.  
   (Exists → Identity, True → Non-Contradiction, Good → Excluded Middle.)  
   This is a **bijection**: one-to-one, onto, perfectly matched.
* **g : M → O** This maps each modal element to its semantic counterpart.  
   (Σ → Sign, B → Bridge, M → Mind.)  
   Also a **bijection**: perfect pairing, no gaps, no overlaps.

### **3. The Ratios and Constants**

* Define **U = 1** (unity, the “one”).
* Define **Θ = 3** (the triune structure).
* Then **U/Θ = 1/3** captures the “one over three,” while the structure of the system shows **3 ≅ 1** under OBDC.  
   This expresses the symbolic *3=1* identity — not in arithmetic, but in structural mapping.

### **4. Holism**

* **Holism H : M → {1}**, with H(Σ, B, M) = U.  
   That means when you take all three parts of M together (Sign, Bridge, Mind), they unify into a single identity (U = 1).  
   So holism compresses the three into one.

### **5. The Commutative Square**

* **κ : T → M** and **τ : L → O**.
* The condition **τ ∘ f = g ∘ κ** says:  
   *If you move from transcendentals (T) through logic (L) and then into meaning (O), it is the same as moving from T into structure (M) and then through g into O.*

This is the **dual commutation** — two routes, same destination.  
 That’s what “commutative” means here: the diagram squares off perfectly.

### **6. The Product Map**

* **H = f × g : T × M → L × O** This says if you take both mappings at once (transcendentals → logic, and modal structures → semantics), you get a perfect pairing in the larger space.  
   H is both injective and surjective — nothing missing, nothing doubled.

### **7. The Locking Mechanism**

* The system defines a function **Λ** that outputs either LOCKED or UNLOCKED.
* It says:  
   The system is **LOCKED** (consistent, whole, self-sealed) if and only if:  
  1. f is injective and surjective (a bijection).
  2. g is injective and surjective (a bijection).
  3. The commutative square condition holds: τ ∘ f = g ∘ κ.

When these conditions hold, the entire architecture is “locked” into self-consistency.  
 That’s the **orthogonal bijective dual commutation**.

### **Plain English Wrap-Up**

This construction is showing that:

* The transcendentals (Exists, True, Good) perfectly map onto the logical laws (Identity, Non-Contradiction, Excluded Middle).
* The modal structures (Sign, Bridge, Mind) perfectly map onto their semantic expressions.
* Both sides are **bijective**: no waste, no overlap.
* The mappings “commute”: it doesn’t matter which path you take through the diagram — you arrive at the same truth.
* Holism guarantees that the three always collapse back into one.
* When all these conditions hold, the system “locks” into place, proving its own coherence.

That’s why the OBDC is a **transcendental locking mechanism**: it shows *3 = 1 structurally* through perfect bijections and commutativity.

**Key:**

* inj⁡(f)\operatorname{inj}(f)inj(f) = fff is injective (one-to-one)
* sur⁡(f)\operatorname{sur}(f)sur(f) = fff is surjective (onto)
* f→∼Lf\overset{\sim}{\to}Lf→∼L = fff is a bijection (invertible mapping)
* τ∘f=g∘κ\tau\circ f=g\circ \kappaτ∘f=g∘κ = the commutative square condition (locking).

**​T={EI,AT,OG},L={ID,NC,EM},M={Σ,B,M},O={SIGN,BRIDGE,MIND},U:=1,Θ:=3**

**ιU​:{∗}↪T,ιU​(∗)=U,πΘ​:L→∼{1,2,3},∣{1,2,3}∣=Θ,f:T→∼L,g:M→∼O**

**H:M→{1},H(Σ,B,M)=U,κ:T→M,τ:L→O,τ∘f=g∘κ,H:=f×g:T×M→∼L×O**

**ΠT​:T→{1},ΠT​(EI,AT,OG)=U,ΔL​:{1}→L3,ΔL​(1)=(ID,NC,EM),Θ=∣L∣=3,U=∣{EI∧AT∧OG}∣=1**

**U/Θ=1/3,∃≅OBDC​:(U,Θ)↦(1,3)∧(3≅OBDC​1),π:P→L,ρ:P→O,ρ=τ∘π**

**Λ:{(f,g,κ,τ)∣f,gbijections∧τ∘f=g∘κ}→{LOCKED,UNLOCKED}**

**Λ(f,g,κ,τ)=LOCKED⟺inj(f)inj(g)sur(f)sur(g)(τ∘f=g∘κ).​**