1. Process is subclass of occurrent
   \[ \forall t,x \, (\text{instanceOf}(x, \text{process}, t) \rightarrow \text{instanceOf}(x, \text{occurrent}, t)) \]

2. If something is a continuant fiat boundary at any time then as long as it exists it is a continuant fiat boundary.
   \[ \forall x \, (\exists t \, \text{instanceOf}(x, \text{continuantFiatBoundary}, t) \rightarrow \forall t \, (\text{existsAt}(x, t) \rightarrow \text{instanceOf}(x, \text{continuantFiatBoundary}, t))) \]

3. Two dimensional spatial region is a universal
   \[ \text{universal}(\text{twoDimensionalSpatialRegion}) \]

4. If something is a independent continuant at any time then as long as it exists it is a independent continuant.
   \[ \forall x \, (\exists t \, \text{instanceOf}(x, \text{independentContinuant}, t) \rightarrow \forall t \, (\text{existsAt}(x, t) \rightarrow \text{instanceOf}(x, \text{independentContinuant}, t))) \]

5. Realizable entity is a universal
   \[ \text{universal}(\text{realizableEntity}) \]

6. Temporal region is subclass of occurrent
   \[ \forall t,x \, (\text{instanceOf}(x, \text{temporalRegion}, t) \rightarrow \text{instanceOf}(x, \text{occurrent}, t)) \]

7. Quality, realizable entity are mutually disjoint
   \[ \neg (\exists x,t \, (\text{instanceOf}(x, \text{quality}, t) \land \text{instanceOf}(x, \text{realizableEntity}, t))) \]

8. Spatial region is subclass of immaterial entity
   \[ \forall t,x \, (\text{instanceOf}(x, \text{spatialRegion}, t) \rightarrow \text{instanceOf}(x, \text{immaterialEntity}, t)) \]

9. If something is a zero dimensional spatial region at any time then as long as it exists it is a zero dimensional spatial region.
   \[ \forall x \, (\exists t \, \text{instanceOf}(x, \text{zeroDimensionalSpatialRegion}, t) \rightarrow \forall t \, (\text{existsAt}(x, t) \rightarrow \text{instanceOf}(x, \text{zeroDimensionalSpatialRegion}, t))) \]

10. Zero dimensional temporal region is a universal
    \[ \text{universal}(\text{zeroDimensionalTemporalRegion}) \]

11. Zero dimensional spatial region is subclass of spatial region
    \[ \forall t,x \, (\text{instanceOf}(x, \text{zeroDimensionalSpatialRegion}, t) \rightarrow \text{instanceOf}(x, \text{spatialRegion}, t)) \]

12. Specifically dependent continuant, independent continuant, generically dependent continuant are mutually disjoint
    \[ \neg (\exists x,t \, (\text{instanceOf}(x, \text{specificallyDependentContinuant}, t) \land \text{instanceOf}(x, \text{independentContinuant}, t))) \]
    \[ \land \neg (\exists x,t \, (\text{instanceOf}(x, \text{specificallyDependentContinuant}, t) \land \text{instanceOf}(x, \text{genericallyDependentContinuant}, t))) \]
    \[ \land \neg (\exists x,t \, (\text{instanceOf}(x, \text{independentContinuant}, t) \land \text{instanceOf}(x, \text{genericallyDependentContinuant}, t))) \]

13. Zero dimensional spatial region is a universal
    \[ \text{universal}(\text{zeroDimensionalSpatialRegion}) \]

14. Temporal interval is a universal
    \[ \text{universal}(\text{temporalInterval}) \]

15. If something is a quality at any time then as long as it exists it is a quality.
    \[ \forall x \, (\exists t \, \text{instanceOf}(x, \text{quality}, t) \rightarrow \forall t \, (\text{existsAt}(x, t) \rightarrow \text{instanceOf}(x, \text{quality}, t))) \]
(16) Spatiotemporal region is a universal
universal(spatiotemporalRegion)

(17) Generically dependent continuant is a universal
universal(genericallyDependentContinuant)

(18) Specifically dependent continuant is a universal
universal(specificallyDependentContinuant)

(19) Fiat object part is a universal
universal(fiatObjectPart)

(20) Material entity, immaterial entity are mutually disjoint
¬(∃x,t(instanceOf(x,materialEntity,t) ∧ instanceOf(x,immaterialEntity,t)))

(21) Three dimensional spatial region is subclass of spatial region
∀t,x(instanceOf(x,threeDimensionalSpatialRegion,t) → instanceOf(x,spatialRegion,t))

(22) Specifically dependent continuant is subclass of continuant
∀t,x(instanceOf(x,specificallyDependentContinuant,t) → instanceOf(x,continuant,t))

(23) One dimensional spatial region is subclass of spatial region
∀t,x(instanceOf(x,oneDimensionalSpatialRegion,t) → instanceOf(x,spatialRegion,t))

(24) Fiat point is a universal
universal(fiatPoint)

(25) Material entity is a universal
universal(materialEntity)

(26) Continuant, occurrent are mutually disjoint
¬(∃x,t(instanceOf(x,continuant,t) ∧ instanceOf(x,occurrent,t)))

(27) If something is a fiat surface at any time then as long as it exists it is a fiat surface.
∀x(∃t instanceOf(x,fiatSurface,t) → ∀t(existsAt(x,t) → instanceOf(x,fiatSurface,t)))

(28) Temporal instant is a universal
universal(temporalInstant)

(29) If something is a fiat point at any time then as long as it exists it is a fiat point.
∀x(∃t instanceOf(x,fiatPoint,t) → ∀t(existsAt(x,t) → instanceOf(x,fiatPoint,t)))

(30) No occurrent changes type during its existence
∀o(∃t instanceOf(o,occurrent,t)
→ ∀u(∃t instanceOf(o,u,t) → ∀t(instanceOf(o,occurrent,t) ↔ instanceOf(o,u,t))))

(31) One dimensional temporal region, zero dimensional temporal region are mutually disjoint
¬(∃x,t(instanceOf(x,oneDimensionalTemporalRegion,t)
∧ instanceOf(x,zeroDimensionalTemporalRegion,t)))

(32) Fiat surface is a universal
universal(fiatSurface)

(33) Occurrent is a universal
universal(occurent)

(34) Generically dependent continuant is subclass of continuant
\[ \forall t,x \ (\text{instanceOf}(x, \text{genericallyDependentContinuant}, t) \rightarrow \text{instanceOf}(x, \text{continuant}, t)) \]

(35) Spatial region is a universal
universal(spatialRegion)

(36) Entity is either universal or particular, so not all are instantiated. Instead make a predicate ‘entity’ analogous to particular universal
\[ \forall x (\exists t (\text{instanceOf}(x, \text{continuant}, t) \lor \text{instanceOf}(x, \text{occurent}, t)) \rightarrow \text{entity}(x)) \]

(37) Independent continuant is a universal
universal(independentContinuant)

(38) Independent continuant is subclass of continuant
\[ \forall t,x \ (\text{instanceOf}(x, \text{independentContinuant}, t) \rightarrow \text{instanceOf}(x, \text{continuant}, t)) \]

(39) Continuant fiat boundary is subclass of immaterial entity
\[ \forall t,x \ (\text{instanceOf}(x, \text{continuantFiatBoundary}, t) \rightarrow \text{instanceOf}(x, \text{immaterialEntity}, t)) \]

(40) One dimensional temporal region is subclass of temporal region
\[ \forall t,x \ (\text{instanceOf}(x, \text{oneDimensionalTemporalRegion}, t) \rightarrow \text{instanceOf}(x, \text{temporalRegion}, t)) \]

(41) Role is subclass of realizable entity
\[ \forall t,x \ (\text{instanceOf}(x, \text{role}, t) \rightarrow \text{instanceOf}(x, \text{realizableEntity}, t)) \]

(42) Fiat object part is subclass of material entity
\[ \forall t,x \ (\text{instanceOf}(x, \text{fiatObjectPart}, t) \rightarrow \text{instanceOf}(x, \text{materialEntity}, t)) \]

(43) If something is a continuant at any time then as long as it exists it is a continuant.
\[ \forall x (\exists t \ (\text{instanceOf}(x, \text{continuant}, t)) \rightarrow \forall t (\text{existsAt}(x, t) \rightarrow \text{instanceOf}(x, \text{continuant}, t))) \]

(44) History is a universal
universal(history)

(45) Universals and particulars comprise the whole domain of discourse
\[ \forall x (\text{universal}(x) \lor \text{particular}(x)) \]

(46) Relational quality is subclass of quality
\[ \forall t,x \ (\text{instanceOf}(x, \text{relationalQuality}, t) \rightarrow \text{instanceOf}(x, \text{quality}, t)) \]

(47) If something is a role at any time then as long as it exists it is a role.
\[ \forall x (\exists t \ (\text{instanceOf}(x, \text{role}, t)) \rightarrow \forall t (\text{existsAt}(x, t) \rightarrow \text{instanceOf}(x, \text{role}, t))) \]

(48) Fiat line is subclass of continuant fiat boundary
\[ \forall t,x \ (\text{instanceOf}(x, \text{fiatLine}, t) \rightarrow \text{instanceOf}(x, \text{continuantFiatBoundary}, t)) \]

(49) Fiat surface, fiat line, fiat point are mutually disjoint
\[ \neg (\exists x,t (\text{instanceOf}(x, \text{fiatSurface}, t) \land \text{instanceOf}(x, \text{fiatLine}, t))) \]
\[ \land \neg (\exists x,t (\text{instanceOf}(x, \text{fiatSurface}, t) \land \text{instanceOf}(x, \text{fiatPoint}, t))) \]
\[ \land \neg (\exists x,t (\text{instanceOf}(x, \text{fiatLine}, t) \land \text{instanceOf}(x, \text{fiatPoint}, t))) \]

(50) Disposition, role are mutually disjoint
¬ (∃x,t(instanceOf(x,disposition,t) ∧ instanceOf(x,role,t)))

(51) Process boundary is subclass of occurrent

∀t,x(instanceOf(x,processBoundary,t) → instanceOf(x,occurrent,t))

(52) Realizable entity is subclass of specifically dependent continuant

∀t,x(instanceOf(x,realizableEntity,t) → instanceOf(x,specificallyDependentContinuant,t))

(53) If something is a one dimensional spatial region at any time then as long as it exists it is a one dimensional spatial region.

∀x (∀t instanceOf(x,oneDimensionalSpatialRegion,t)
→ ∀t(existsAt(x,t) → instanceOf(x,oneDimensionalSpatialRegion,t)))

(54) Temporal region is a universal

universal(temporalRegion)

(55) If something is a material entity at any time then as long as it exists it is a material entity.

∀x (∀t instanceOf(x,materialEntity,t)
→ ∀t(existsAt(x,t) → instanceOf(x,materialEntity,t)))

(56) Two dimensional spatial region is subclass of spatial region

∀t,x(instanceOf(x,twoDimensionalSpatialRegion,t) → instanceOf(x,spatialRegion,t))

(57) Function is subclass of disposition

∀t,x(instanceOf(x,function,t) → instanceOf(x,disposition,t))

(58) Universals are not particulars

¬ (∃x(universal(x) ∧ particular(x)))

(59) If something is a spatial region at any time then as long as it exists it is a spatial region.

∀x (∀t instanceOf(x,spatialRegion,t) → ∀t(existsAt(x,t) → instanceOf(x,spatialRegion,t)))

(60) Fiat point is subclass of continuant fiat boundary

∀t,x(instanceOf(x,fiatPoint,t) → instanceOf(x,continuantFiatBoundary,t))

(61) Disposition is a universal

universal(disposition)

(62) Relational quality is a universal

universal(relationalQuality)

(63) Fiat line is a universal

universal(fiatLine)

(64) Object is subclass of material entity

∀t,x(instanceOf(x,object,t) → instanceOf(x,materialEntity,t))

(65) Fiat surface is subclass of continuant fiat boundary

∀t,x(instanceOf(x,fiatSurface,t) → instanceOf(x,continuantFiatBoundary,t))

(66) If something is a fiat line at any time then as long as it exists it is a fiat line.

∀x (∀t instanceOf(x,fiatLine,t) → ∀t(existsAt(x,t) → instanceOf(x,fiatLine,t)))

(67) If something is a three dimensional spatial region at any time then as long as it exists it is a three dimensional spatial region.
∀ x (\exists t instanceOf(x,threeDimensionalSpatialRegion,t) → ∀t (existsAt(x,t) → instanceOf(x,threeDimensionalSpatialRegion,t)))

(68) Continuant, material entity, object, fiat object part, object aggregate, site, immaterial entity, continuant fiat boundary, fiat surface, fiat line, fiat point, spatial region, three dimensional spatial region, two dimensional spatial region, one dimensional spatial region, zero dimensional spatial region, independent continuant, generically dependent continuant, specifically dependent continuant, quality, relational quality, function, disposition, realizable entity, role, occurrent, process, process boundary, temporal region, zero dimensional temporal region, temporal instant, one dimensional temporal region, temporal interval, history, spatiotemporal region are all different.

The axiom is too large to show. It is a conjunction of 1190 pairwise inequalities between the constants continuant, materialEntity, object, fiatObjectPart, objectAggregate, site, immaterialEntity, continuantFiatBoundary, fiatSurface, fiatLine, fiatPoint, spatialRegion, threeDimensionalSpatialRegion, twoDimensionalSpatialRegion, oneDimensionalSpatialRegion, zeroDimensionalSpatialRegion, independentContinuant, genericallyDependentContinuant, specificallyDependentContinuant, quality, relationalQuality, function, disposition, realizableEntity, role, occurrent, process, processBoundary, temporalRegion, zeroDimensionalTemporalRegion, temporalInstant, oneDimensionalTemporalRegion, temporalInterval, history and spatiotemporalRegion.

(69) If something is an instance of temporal region at t, then t is part of that temporal region.

∀ t, x (instanceOf(x,temporalRegion,t) → temporalPartOf(t,x))

(70) Temporal instant is subclass of zero dimensional temporal region.

∀ t, x (instanceOf(x,temporalInstant,t) → instanceOf(x,zeroDimensionalTemporalRegion,t))

(71) If something is a two dimensional spatial region at any time then as long as it exists it is a two dimensional spatial region.

∀ x (\exists t instanceOf(x,twoDimensionalSpatialRegion,t) → ∀t (existsAt(x,t) → instanceOf(x,twoDimensionalSpatialRegion,t)))

(72) Immaterial entity is subclass of independent continuant.

∀ t, x (instanceOf(x,immaterialEntity,t) → instanceOf(x,independentContinuant,t))

(73) Zero dimensional temporal region is subclass of temporal region.

∀ t, x (instanceOf(x,zeroDimensionalTemporalRegion,t) → instanceOf(x,temporalRegion,t))

(74) If something is a immaterial entity at any time then as long as it exists it is a immaterial entity.

∀ x (\exists t instanceOf(x,immaterialEntity,t) → ∀t (existsAt(x,t) → instanceOf(x,immaterialEntity,t)))

(75) If something is a site at any time then as long as it exists it is a site.

∀ x (\exists t instanceOf(x,site,t) → ∀t (existsAt(x,t) → instanceOf(x,site,t)))

(76) Site is subclass of immaterial entity.

∀ t, x (instanceOf(x,site,t) → instanceOf(x,immaterialEntity,t))

(77) Site is a universal.

universal(site)

(78) Zero dimensional spatial region, one dimensional spatial region, two dimensional spatial region, three dimensional spatial region are mutually disjoint.
\[\neg(\exists x, t (\text{instanceOf}(x, \text{zeroDimensionalSpatialRegion}, t) \land \text{instanceOf}(x, \text{oneDimensionalSpatialRegion}, t))) \land \neg(\exists x, t (\text{instanceOf}(x, \text{zeroDimensionalSpatialRegion}, t) \land \text{instanceOf}(x, \text{twoDimensionalSpatialRegion}, t))) \land \neg(\exists x, t (\text{instanceOf}(x, \text{zeroDimensionalSpatialRegion}, t) \land \text{instanceOf}(x, \text{threeDimensionalSpatialRegion}, t))) \land \neg(\exists x, t (\text{instanceOf}(x, \text{oneDimensionalSpatialRegion}, t) \land \text{instanceOf}(x, \text{twoDimensionalSpatialRegion}, t))) \land \neg(\exists x, t (\text{instanceOf}(x, \text{oneDimensionalSpatialRegion}, t) \land \text{instanceOf}(x, \text{threeDimensionalSpatialRegion}, t))) \land \neg(\exists x, t (\text{instanceOf}(x, \text{twoDimensionalSpatialRegion}, t) \land \text{instanceOf}(x, \text{threeDimensionalSpatialRegion}, t)))\]

(79) Material entity is subclass of independent continuant
\[
\forall t, x (\text{instanceOf}(x, \text{materialEntity}, t) \rightarrow \text{instanceOf}(x, \text{independentContinuant}, t))
\]

(80) History is subclass of process
\[
\forall t, x (\text{instanceOf}(x, \text{history}, t) \rightarrow \text{instanceOf}(x, \text{process}, t))
\]

(81) One dimensional spatial region is a universal
\[
\text{universal}(\text{oneDimensionalSpatialRegion})
\]

(82) Quality is a universal
\[
\text{universal}(\text{quality})
\]

(83) If something is a function at any time then as long as it exists it is a function.
\[
\forall x (\exists t \text{instanceOf}(x, \text{function}, t) \rightarrow \forall t (\text{existsAt}(x, t) \rightarrow \text{instanceOf}(x, \text{function}, t))
\]

(84) Continuant is a universal
\[
\text{universal}(\text{continuant})
\]

(85) If something is a relational quality at any time then as long as it exists it is a relational quality.
\[
\forall x (\exists t \text{instanceOf}(x, \text{relationalQuality}, t) \rightarrow \forall t (\text{existsAt}(x, t) \rightarrow \text{instanceOf}(x, \text{relationalQuality}, t))
\]

(86) One dimensional temporal region is a universal
\[
\text{universal}(\text{oneDimensionalTemporalRegion})
\]

(87) Process boundary is a universal
\[
\text{universal}(\text{processBoundary})
\]

(88) Function is a universal
\[
\text{universal}(\text{function})
\]

(89) Role is a universal
\[
\text{universal}(\text{role})
\]

(90) Immaterial entity is a universal
\[
\text{universal}(\text{immaterialEntity})
\]

(91) Three dimensional spatial region is a universal
\[
\text{universal}(\text{threeDimensionalSpatialRegion})
\]

(92) Quality is subclass of specifically dependent continuant
\[
\forall t, x (\text{instanceOf}(x, \text{quality}, t) \rightarrow \text{instanceOf}(x, \text{specificallyDependentContinuant}, t))
\]

(93) Temporal interval is subclass of one dimensional temporal region
∀t,x (instanceOf(x,temporalInterval,t) → instanceOf(x,oneDimensionalTemporalRegion,t))

(94) Object aggregate is a universal

universal(objectAggregate)

(95) If something is a disposition at any time then as long as it exists it is a disposition.

∀x (∃t instanceOf(x,disposition,t) → ∀t (existsAt(x,t) → instanceOf(x,disposition,t)))

(96) Object aggregate is subclass of material entity

∀t,x (instanceOf(x,objectAggregate,t) → instanceOf(x,materialEntity,t))

(97) If something is a realizable entity at any time then as long as it exists it is a realizable entity.

∀x (∃t instanceOf(x,realizableEntity,t) → ∀t (existsAt(x,t) → instanceOf(x,realizableEntity,t)))

(98) Object is a universal

universal(object)

(99) Continuant fiat boundary is a universal

universal(continuantFiatBoundary)

(100) Process is a universal

universal(process)

(101) If something is a generically dependent continuant at any time then as long as it exists it is a generically dependent continuant.

∀x (∃t instanceOf(x,genericallyDependentContinuant,t) → ∀t (existsAt(x,t) → instanceOf(x,genericallyDependentContinuant,t)))

(102) If something is a specifically dependent continuant at any time then as long as it exists it is a specifically dependent continuant.

∀x (∃t instanceOf(x,specificallyDependentContinuant,t) → ∀t (existsAt(x,t) → instanceOf(x,specificallyDependentContinuant,t)))

(103) Process, spatiotemporal region, process boundary, temporal region are mutually disjoint

¬∃x,t (instanceOf(x,process,t) ∧ instanceOf(x,spatiotemporalRegion,t))
∧ ¬∃x,t (instanceOf(x,process,t) ∧ instanceOf(x,processBoundary,t))
∧ ¬∃x,t (instanceOf(x,process,t) ∧ instanceOf(x,temporalRegion,t))
∧ ¬∃x,t (instanceOf(x,spatiotemporalRegion,t) ∧ instanceOf(x,processBoundary,t))
∧ ¬∃x,t (instanceOf(x,spatiotemporalRegion,t) ∧ instanceOf(x,temporalRegion,t))
∧ ¬∃x,t (instanceOf(x,processBoundary,t) ∧ instanceOf(x,temporalRegion,t))

(104) Spatiotemporal region is subclass of occurrent

∀t,x (instanceOf(x,spatiotemporalRegion,t) → instanceOf(x,occurent,t))

(105) Site, spatial region, continuant fiat boundary are mutually disjoint

¬∃x,t (instanceOf(x,site,t) ∧ instanceOf(x,spatialRegion,t))
∧ ¬∃x,t (instanceOf(x,site,t) ∧ instanceOf(x,continuantFiatBoundary,t))
∧ ¬∃x,t (instanceOf(x,spatialRegion,t) ∧ instanceOf(x,continuantFiatBoundary,t))

(106) Disposition is subclass of realizable entity

∀t,x (instanceOf(x,disposition,t) → instanceOf(x,realizableEntity,t))