OGMS: The Ontology for General Medical Science

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Disposition

Internally-Grounded Realizable Entity

A disposition is a realizable entity which is such that, if it ceases to exist, then its bearer is physically changed, whose realization occurs, in virtue of the bearer’s physical make-up, when this bearer is in some special physical circumstances.
Disorder

1. person
   - independent continuant
     objects
     fiat object part
     object aggregate

Disorder

A fiat object part of an organism which serves as the bearer of a disposition of a certain sort
This fiat object part is part of the organism and in the case of progressive diseases typically grows larger through time
It is real, but it may have no determinate boundaries
Where does Mount Everest begin and end?

A *disease* is a *disposition* rooted in a *physical disorder* in the organism and realized in *pathological processes*.

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**Elucidation of Primitive Terms**

- **‘bodily feature’** - an abbreviation for a physical component, a bodily quality, or a bodily process.
- **disposition** - an attribute describing the propensity to initiate certain specific sorts of processes when certain conditions are satisfied.
- **clinically abnormal** - some bodily feature that
  - (1) is not part of the life plan for an organism of the relevant type (unlike aging or pregnancy),
  - (2) is causally linked to an elevated risk either of pain or other feelings of illness, or of death or dysfunction, and
  - (3) is such that the elevated risk exceeds a certain threshold level.*

*Compare: baldness*
Definitions - Foundational Terms

- **Disorder =def.** – A causally linked combination of physical components that is clinically abnormal.
- **Pathological Process =def.** – A bodily process that is a manifestation of a disorder and is clinically abnormal.
- **Disease =def.** – A disposition (i) to undergo pathological processes that (ii) exists in an organism because of one or more disorders in that organism.

Dispositions and Predispositions

- All diseases are dispositions; not all dispositions are diseases.
- A predisposition is a disposition.
- **Predisposition to Disease of Type X =def.** – A disposition in an organism that constitutes an increased risk of the organism’s subsequently developing the disease X.
- HNPCC is caused by a
  - disorder (mutation) in a DNA mismatch repair gene that
  - disposes to the acquisition of additional mutations from defective DNA repair processes, and thus is a
  - predisposition to the development of colon cancer.
Cirrhosis - environmental exposure

- Etiological process - phenobarbital-induced hepatic cell death
  - produces
- Disorder - necrotic liver
  - bears
- Disposition (disease) - cirrhosis
  - realized in
- Pathological process - abnormal tissue repair with cell proliferation and fibrosis that exceed a certain threshold; hypoxia-induced cell death
  - produces
- Abnormal bodily features
  - recognized as
- Symptoms - fatigue, anorexia
- Signs - jaundice, splenomegaly

- Symptoms & Signs
  - used in
- Interpretive process
  - produces
- Hypothesis - rule out cirrhosis
  - suggests
- Laboratory tests
  - produces
- Test results - elevated liver enzymes in serum
  - used in
- Interpretive process
  - produces
- Result - diagnosis that patient X has a disorder that bears the disease cirrhosis

Influenza - infectious

- Etiological process - infection of airway epithelial cells with influenza virus
  - produces
- Disorder - viable cells with influenza virus
  - bears
- Disposition (disease) - flu
  - realized in
- Pathological process - acute inflammation
  - produces
- Abnormal bodily features
  - recognized as
- Symptoms - weakness, dizziness
- Signs - fever

- Symptoms & Signs
  - used in
- Interpretive process
  - produces
- Hypothesis - rule out influenza
  - suggests
- Laboratory tests
  - produces
- Test results - elevated serum antibody titers
  - used in
- Interpretive process
  - produces
- Result - diagnosis that patient X has a disorder that bears the disease flu
Huntington’s Disease - genetic

- Etiological process - inheritance of >39 CAG repeats in the HTT gene
  - produces
- Disorder - chromosome 4 with abnormal mHTT
  - bears
- Disposition (disease) - Huntington’s disease
  - realized in
- Pathological process - accumulation of mHTT protein fragments, abnormal transcription regulation, neuronal cell death in striatum
  - produces
- Abnormal bodily features
  - recognized as
- Symptoms - anxiety, depression
- Signs - difficulties in speaking and swallowing

Symptoms & Signs
- used in
- Interpretive process
- produces
- Hypothesis - rule out Huntington’s
disease
- suggests
- Laboratory tests
- produces
- Test results - molecular detection of the HTT gene with >39CAG repeats
  - used in
- Interpretive process
- produces
- Result - diagnosis that patient X has a disorder that bears the disease Huntington’s disease

HNPCC - genetic pre-disposition

- Etiological process - inheritance of a mutant mismatch repair gene
  - produces
- Disorder - chromosome 3 with abnormal hMLH1
  - bears
- Disposition (disease) - Lynch syndrome
  - realized in
- Pathological process - abnormal repair of DNA mismatches
  - produces
- Disorder - mutations in proto-oncogenes and tumor suppressor genes with microsatellite repeats (e.g. TGF-beta R2)
  - bears
- Disposition (disease) - non-polyposis colon cancer
  - realized in
- Symptoms (including pain)