Towards a BFO-Conformant Ontology of Deontic Entities

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Gainesville, FL
BFO now being used in many areas to ensure interoperability by providing a common domain neutral starting point for distributed ontology creation.

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<th>OBO Foundry</th>
<th>Open Biomedical Ontologies Foundary</th>
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<td>cROP / Planteome</td>
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</table>
BFO and deontic entities

The puzzle:
Obligations have a certain requiredness, a pull on the bearer of the obligation which is at least analogous to a physical force (or to a BFO disposition)
But obligations can be acquired (like BFO roll) through mere acts of speaking, or acts of signing a document
BFO: the very top

- Continuant
  - Independent Continuant
  - Dependent Continuant
  - Occurrent (always dependent on one or more independent continuants)
Continuant entities
- have continuous existence in time
- preserve their identity through change
- exist *in toto* if they exist at all

Occurrent entities
- have temporal parts
- unfold themselves phase by phase
- exist only in their phases/stages
You are a substance
Your life is a process

You are 3-dimensional
Your life is 4-dimensional
BFO: the very top

Continuant

Independent Continuant
Dependent Continuant

Occurrent (always dependent on one or more independent continuants)

 universals

 instances

8
specifically_depends_on

Continuant

Independent Continuant
- thing

Dependent Continuant
- quality

Occurrent
- process, event

temperature depends on specific bearer
specifically depends on

Continuant

Independent Continuant
thing

Dependent Continuant
quality, ...

Occurrent

process, event

process depends on participant
instance_of

- **Continuant**
  - Independent Continuant
    - thing
  - Dependent Continuant
    - quality
- **Occurrent**
  - process, event

- **Universals**
- **Instances**
Realizable dependent continuants

Role: nurse role, pathogen role, food role
Disposition: fragility, virulence, loyalty, honesty
Function: to unlock (of a key), to create a binding agreement

– all in need of realizations
– qualities are not in need of realizations
– duties are in need of realizations
Continuant

Independent Continuant

Specifically Dependent Continuant

Non-realizable Dependent Continuant (\textit{quality})

Realizable Dependent Continuant (\textit{function, role, disposition})
realization specifically depends on realizable
Role (Externally-Grounded Realizable Entity)

role =def. a realizable entity

• which exists because the bearer is in some special physical, social, or institutional set of circumstances in which the bearer does not have to be, and

• is not such that, if it ceases to exist, then the physical make-up of the bearer is thereby changed
Roles allow us to deal with phase sortals

John instance_of nurse at t =Def.

John instance_of human being at t
& for some x, x instance_of nurse role
& x inheres_in John at t
Disposition (Internally-Grounded Realizable Entity, Power, Potential)

\[
\text{disposition} = \text{def.}
\]

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

Social entities involve combinations of roles and dispositions on the part of (a) individuals and (b) the communities in which they grow up and live.

Example: a language, needs competence \textit{(disposition)} on the part of an individual, but also a \textit{disposition} in the wider society to converse in the language, to school in correct use (where some people have the \textit{role} of teachers).
Speech Acts (Austin, Searle)

- Examples: requesting, questioning, answering, ordering, imparting information, promising, commanding, baptising
- Social acts which “are performed in the very act of speaking”
- Searle: performed against a background of cognitive competences and environmental conditions ((for instance: social habits)
Background presuppositions

Deontic entities are part of culture
Three stages in the development of culture:
  1. without language,
  2. with language but confined to speech,
  3. with writing / printing / CPUs
With 1. and 2. culture is stored in human brains/bodies; with 3. culture is stored also in external memory (cave paintings, dictionaries, law codes, google)
What’s special about humans

Richersen and Boyd, *Not by Genes Alone*, Chicago, 2005

only humans show much evidence of *cumulative* cultural evolution (p. 107)

as language evolves by small steps, so culture evolves by small steps (p. 36)
Is culture a matter of information?

Culture is **information** capable of affecting individuals’ behavior that they acquire from other members of their species through teaching, imitation and other forms of social transmission. (Peter J. Richersen and Robert Boyd, *Not by Genes Alone*, Chicago, 2005, p. 5)

Duties seem not only a matter of information – they are also a matter of oughtness, of a pull on one’s behavior, of the way we behave in relation to the wider society

Duties go hand in hand with sanction / punishment

Because mutually beneficial cooperation may unravel unless most members of a group contribute, people often gang up on free-riders, punishing them when this is cost-effective in sustaining cooperation. … we present a model of coordinated punishment that is calibrated for ancestral human conditions [in which] The total cost of punishing a free-rider declines as the number of punishers increases. We show that punishment can proliferate when rare, and when it does, it enhances group-average payoffs.
Culture is not just information stored in brains

Imagine a 5-stone weakling having his brain loaded with the knowledge of a champion tennis player.
He goes to serve in his first match
-- Wham! --
his arm falls off.
He just doesn’t have the bone structure or muscular development to serve that hard.

Harry M. Collins, “Humans, Machines, and the Structure of Knowledge”
SEHR, 4: 2 (1995)
A. Clark, *Being There*

we can rely not merely on information in our brains and on messages (speech, emails …) but also on
external scaffolding = maps, models, tools, books, codes, google, other people guiding our behavior,
we act so as to simplify cognitive tasks by "leaning on" the structures in our environment.
Types of knowledge/ability/skill

1. those that can be transferred simply by passing signals from one brain/computer to another.

2. those that can’t:
   -- here the "hardware" is important;
   abilities/skills/attractors/pipelines contained
   (a) in the body
   (b) in the world
Hypothesis

To understand cooperation we need to understand duties, obligations, claims, rights, permissions, consents, and other core, deontic entities.

where do these sorts of entities belong in BFO?
Mutual dependence

the *disposition of this key* (to open this lock) is mutually dependent on the *disposition of this lock* to be opened by this key

mutually dependent roles:

- husband / wife
- doctor / patient
- employer/employee
- host / pathogen
Mutual dependence among deontic entities

John signs a contract with Mary committing himself to do X
He thereby acquires an obligation to do X
Mary acquires a claim on John that he do X
Claim and obligation are mutually dependent continuants
Mutual generic dependence

de the disposition of this key (to open this lock) is mutually
dependent on the disposition of this lock to be opened by this
key
   but the key can open multiple locks; the lock can pen multiple
   keys
this debt of money I owe Mary is generically dependent on me –
the debt might be transferred (to my heirs, to my business
partners)
Generic Dependence

specific dependence:
• my headache depends specifically upon my head
• my temperature depends specifically upon my body

generic dependence:
• this gene sequence depends for its existence on *some* molecule with a certain structure
• this pdf file depends for its existence on *some* memory store with a certain structure
Continuant

Independent Continuant

Specifically Dependent Continuant (SDC)

Realizable SDC

Disposition

Role

Generically Dependent Continuant (GDC)

Information Content Entity
where do claims and obligations belong in BFO?

Independent Continuant

Specifically Dependent Continuant (SDC)

Realizable SDC

Disposition

Role

Generically Dependent Continuant (GDC)

Information Content Entity
claims and obligations are continuants

- Independent Continuant
- Specifically Dependent Continuant (SDC)
- Generically Dependent Continuant (GDC)
- Realizable SDC
  - Disposition
  - Role
- Information Content Entity
Continuant

Independent
Continuant
\((John, Mary)\)

Specifically Dependent
Continuant \((SDC)\)

Realizable SDC

Disposition

Generically Dependent
Continuant \((GDC)\)

Role

Obligor Role
\((of John)\)

Obligee Role
\((of Mary)\)

Information
Artifact
\((the contract)\)
Continuant

Independent Continuant
(*John, Mary*)

Specifically Dependent Continuant (SDC)

Realizable SDC

Disposition

Disposition: to perform *(of John)*

Role

Disposition: to monitor, to claim ... *(of Mary)*

Generically Dependent Continuant (GDC)

Information Artifact *(the contract)*
Continuant

Independent Continuant
\((John, Mary)\)

Specifically Dependent Continuant (SDC)

Realizable SDC

Generically Dependent Continuant (GDC)

Disposition

Disposition: to perform \((of John)\)

Disposition: to monitor, to claim ... \((of Mary)\)

Role

Obligor Role \((of John)\)

Obligee Role \((of Mary)\)

Information Artifact \((the contract)\)
but where is the obligation?

- Independent Continuant: (John, Mary)
- Specifically Dependent Continuant (SDC)
- Generically Dependent Continuant (GDC)

Realizable SDC

- Disposition
  - Disposition: to perform (of John)
  - Disposition: to monitor, to claim ... (of Mary)

- Role
  - Obligor Role (of John)
  - Obligee Role (of Mary)

- Information Artifact (the contract)
Continuant

Independent Continuant *(John, Mary)*

Specifically Dependent Continuant *(SDC)*

Generically Dependent Continuant *(GDC)*

Realizable SDC

Disposition

Disposition: to perform *(of John)*

Disposition: to monitor, to claim ... *(of Mary)*

Role

Obligor Role *(of John)*

Obligee Role *(of Mary)*

Information Artifact *(the contract)*
FORMAL ONTOLOGY (DOMAIN-NEUTRAL)

Continuant

Independent Continuant (John, Mary)
Specifically Dependent Continuant (SDC)
Generically Dependent Continuant (GDC)

Realizable SDC

Disposition

Disposition: to perform (of John)
Disposition: to monitor, to claim ... (of Mary)

Role

Obligee Role (of Mary)
Obligor Role (of John)

Information Artifact (the contract)
Continuant

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Realizable SDC

Disposition

Disposition: to perform (of John)

Disposition: to monitor, to claim ... (of Mary)

Role

Obligor Role (of John)

Obligee Role (of Mary)

Information Artifact (the contract)

FORMAL ONTOLOGY (DOMAIN-NEUTRAL)

MATERIAL ONTOLOGY (DOMAIN-SPECIFIC)
claim and obligation

are universals from a material (=domain specific) ontology
But does the proper treatment of claim and obligation require one or more new formal universals to be added to the BFO framework?
I will try to show: no
Compare *language*

Each person’s linguistic competence is a disposition
A language itself is (something like) the sum total of the linguistic competences of all its users

- Con: The definition seems circular
- Con: Works only for natural living languages
- Pro: There is no better account
- Pro: Gives exactly the right account of how languages relate to each other and to dialects (the vagueness of the boundaries of any given language)
- Pro: Accounts for the role of dictionaries, and of the *Académie française*
Would you say "Are you coming with?" as a full sentence, to mean "Are you coming with us?"
Multiple kinds of linguistic dispositions

To speak, to write, to hear and understand, to read
To use language in solitary thinking
Communicative competence
Persuasive competence
Dispositions to exchange information, gossip, in two-person exchange
Dispositions to use language to bring about changes in the world
Language is more than just a matter of information

- More than just collections of (written and spoken) words
- More than just rules governing written and spoken words
- Linguistic competences are brain/body competences – so BFO: dispositions
Thomas Reid (1785)

John promises to Mary that he will do X

creates a miniature ‘civil society’
Reid’s theory of ‘social operations’

‘social acts’ vs. ‘solitary acts’

A social act … must be directed to some other person

Before Reid no recognition of this distinction
John promises to Mary that he will do X

Disposition to do X (of John)

Realizable SDC

Disposition

Role

Specifically Dependent Continuant (SDC)

Initial dispositions
to monitor
to evoke a claim ...

Terminal dispositions in case of failure to perform
to blame
to shame
to punish ...

(of Mary towards John)
Specifically Dependent Continuant (SDC)

Realizable SDC

Disposition

Role

Disposition to do X (of John)

Initial dispositions
to monitor
to evoke a claim ...

Terminal dispositions in case of failure to perform
to blame
to shame
to punish ...

(of Mary towards John)

do these involve changes in the bodies/brains of those who have them?

John promises to Mary that he will do X
John promises to Mary that he will do X

Disposition to do X (of John)

Initial dispositions
  - to monitor
  - to evoke a claim ...

Dispositions in case of failure to perform
  - to blame
  - to shame
  - to punish ...

(of Mary towards John, plus
of the wider society towards bearers of the promiser role who fail to perform)

these are acquired through childhood training
Hypotheses

1. any society with no widespread disposition, deeply entrenched from childhood, to sanction in cases of failure to perform also has no obligations.

2. our ~linguistic competences form part of what Searle calls the background of social acts, and include dispositions to sanction.
Languages are tied to obligations

Core speakers of a language (mothers, school-teachers, dictionary compilers, terminologists ...) have

Dispositions
  to monitor
  to evoke a claim ...
Dispositions *in case of failure to perform*
  to blame
  to shame
  to punish ...

their fellow language users for incorrect uses of language
  (incorrect dialect, incorrect word choice, inappropriate utterance ...)

Hohfeldian legal relations

1. X has the RIGHT that Y performs A, iff in case Y does not perform A, X may react with an action R such that Y is negatively affected by R. **COMMAND**

2. X has the DUTY (OBLIGATION) to perform A for Y, iff in case X does not perform A, Y may react with an action R such that X is negatively affected by R. **PROMISE**

DUTY is the opposite’ of RIGHT, where the roles of the two agents are interchanged

1. X has NO-RIGHT that Y performs A, iff …

2. Y has the PRIVILEGE (is allowed) to perform A with respect to X, …

Reid on natural (gesture) language

The elements of the “natural language of mankind” are “modulations of the voice, gestures, and features”

“Where speech is natural, it will be an exercise, not of the voice and lungs only, but of all the muscles of the body;

Sanction upon failure to perform may involve sneering, turning up nose, raising of eyebrow … these sanctions are extensions of language
Adolf Reinach
Social Acts (Adolf Reinach)

The A Priori Foundations of the Civil Law – 1913

A study of the ontology of the promise and related social phenomena

Part of a wider ontology of legal phenomena such as contract and legislation

A ‘contribution to the general ontology of social interaction’
Reinach on commanding

A command is neither a purely external action nor is it a purely inner experience, nor is it the announcing to another person of such an experience.

Commanding ... does not involve an experience which is expressed but which could have remained unexpressed,

...there is nothing about commanding which could rightly be taken as the pure announcing of an internal experience.
Reinach on commanding

Commanding is an experience all its own, a doing of the subject to which in addition to its *spontaneity*, its *intentionality* and its *other-directedness*, the *need to be grasped* is also essential

Commanding, requesting, warning …

are all social acts, which by the one who performs them and *in the performance itself*, are cast towards another person in order to fasten themselves in his soul.
Social acts depend on uptake

(contrast: envy, forgiveness)

social acts must be both
addressed to other people
and
registered by their addressees
social acts in need of uptake

These social acts are essentially in need of uptake by an addressee:

– (1) I promise you that p
– (2) I ask you whether p
– (3) I order you to F

These social acts are not in need of uptake

– (4) I waive my claim to p
– 5) I hereby enact that p
Enactments / Declarations

BGB §1: “The ability of a person to be a subject of rights/law begins with the completion of birth”

This is ‘not any sort of judgement’

Valid laws shape/create environments

*Rechtsfähigkeit* = the ability to be a subject of rights/law

something *created* by the document act which is the enactment of a law

An example of *ontological fecundity*
Founding Relations for Social Acts

*Commands, marryings, baptisings*

depend on

i. relations of authority

ii. an appropriate environment
Grounding Social Acts

Reinach:

‘A question is grounded insofar as the state of affairs which it puts into question is objectively doubtful; an enactment is grounded insofar as the norm which is enacted, objectively ought to be.’
Non-Physical Social Entities

relations of authority …

(SIMULTANEOUS BASIS)

claims, obligations …

(SUCCESSOR STATES)
The Structure of the Promise

promiser \[\rightarrow\] the promise \[\rightarrow\] promisee

relations of one-sided dependence
The Structure of the Promise

- promiser
- promisee

act of speaking
act of registering
content

three-sided mutual dependence
The Structure of the Promise

- promiser
- promisee
- act of speaking
- act of registering
- content
- obligation
- claim
- two-sided mutual dependence
“Obligation” and “Duty”

Sometimes “obligation” restricted to: what comes into existence as a result of a specific act – as contrasted with for instance moral/ethical duties (We are not concerned here with ethics)

We treat these terms as synonymous

Most obligations/duties arise through consent (part of uptake)

Some do not: obligation of first-born son of King to succeed him, obligation to military service on reaching age of maturity …
Modifications of Social Acts (Searle: felicity conditions)

Sham promises; lies as sham assertions (cf. a forged signature); rhetorical questions

Social acts performed in someone else’s name (representation, delegation)

Social acts with multiple addresses

Conditional social acts

Collective social acts
To build an ontology of a domain, first build an ontology of canonical cases

The core structure described on the previous slide is an attractor – there will be a tendency for deviations from this structure – for instance on the part of Fake Online Locksmiths – to be eliminated through the workings of social and market forces
The Structure of the Promise

The diagram illustrates the structure of a promise with the following components:

- **Promiser**
- **Promisee**
- **Act of Speaking**
- **Act of Registering**
- **Content F**
- **Obligation**
- **Claim**

The diagram shows the relationship between these elements with arrows indicating the flow and interaction:

- The promiser communicates with the promisee through the act of speaking.
- The act of registering content F is associated with the obligation and claim.
- The action of doing F is indicated by the arrow to the promisee.

The diagram also notes the equal sign between the obligation and claim, indicating a balance or relationship.

The tendency towards realization is highlighted, suggesting the fulfillment or realization of the promise.

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The semi-ritualized event of speaking we call a promise gives rise to mutually correlated (states of) claim and obligation.

Diagram:

- Promiser
- Promisee
- Act of speaking
- Act of registering
- Content
- Obligation
- Claim
- Two-sided mutual dependence
Enhanced view 1

action: do F on the part of the promiser

blame and shame the promise in case of failure to do F

initial tendency towards realization

terminal tendency towards blaming and shaming
Enhanced view 2

action: do F on the part of the promiser

promiser

act of speaking

content F

act of registering

promissee

claim

obligation

initial tendency towards realization

= terminal tendency towards blaming and shaming

blame and shame the promise in case of failure to do F
Enhanced view 3

action: do F on the part of the promiser

act of speaking

act of registering

content F

promisee

obligation

claim

initial tendency towards realization

= terminal tendency towards blaming and shaming in promiser and in wider society

blame and shame the promise in case of failure to do F
Different kinds of sanction

sneering

gossip

withdrawal of trust (damage to reputation)

withdrawal of permissions / credentials

on-line review (Tripadvisor)

arrest by police
action: do F

The Background (Brains, Culture, Environment)

How modifications occur
The Background (Brains, Culture, Environment)

How modifications occur

The act of speaking

The act of registering

Content F

Obligation

Claim

Promiser

Promisee

Sincere intention

How modifications occur

action: do F
How modifications occur

The Background (Brains, Culture, Environment)
The Background (Brains, Culture, Environment)

Promiser

Promisee

Act of speaking

Act of registering

Content F

Sincere intention

Obligation

Claim

Action: do F

How modifications occur
Plan specification vs. Plan

Recipe in a book vs. Recipe in your head when you start to cook
Structure of the Mental Act of Plan Commitment

- Commander
  - Mental act of deciding to realize plan specified in plan specification #1
    - Commitment to realize plan #1
- Action: realize plan #1
  - =
  - Tendency towards realization
  - BUT NO OBLIGATION
Structure of the Speech Act of Plan Commitment (Obligation depends on Uptake)

- PI team members
- act of speaking
  - act of registering
    - content of plan specification #1
      - commitment to realize plan #1
      - obligation to realize plan #1

action: realize plan #1

tendency towards realization
Searle: Ontological Fecundity

Speech acts are acts performed by uttering expressions in accordance with certain constitutive rules.

When you perform a speech act then you create certain institutional facts.
Institutional facts
exist because we are able to treat the world and each other in certain, very special (non-causal) ways

Examples of institutions:
  money
  property
  marriage
  government
  document-driven health-care

Institutional facts pop into existence because of acts of language use (speech acts, document acts)
Making of a Promise

action: do F on the part of the promiser

promiser

act of speaking

act of registering

content F

promisee

obligation

claim

blame and shame the promise in case of failure to do F

= initial tendency towards realization

= terminal tendency towards blaming and shaming in promiser and in wider society

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Making of a Command

commander

act of speaking

act of registering

content of order

claim

obligation

authority of commander (role)

subordinate (role)

action: follow order

subordinate

(role)
Making of a Lab Test Order

order issuer

order document

act of form filling

content of order

act of registering

claim

obligation

order recipient

action: fill order

authority of issuer (role)

subordinate (role)
The competences of which language is comprised

1. Intra-Linguistic Dispositions
   • to speak,
   • to write,
   • to register (hear/read and understand) the content of what is spoken, written
   • to respond (in conversations, in response to questions, in response to requests for information)
   • to monitor, blame, etc. (see above)
The competences of which language is comprised

2. Dispositions to use language to achieve extra-linguistic benefits

2a. for oneself
- to request, beg, command, plead, entreat, claim …

2b. for another
- to promise, oblige oneself, contract, waive a claim …
Extra-linguistic realizables whose existence is triggered by uses of language

1. as when an act of promising triggers the beginning to exist of
   – the disposition on the side of the promissor to act in such a way as to fulfil the content of the promise
   – the obligation to fulfil the content of the promise
   – the disposition on the side of the promissee to monitor fulfilment (and subsequently to blame, shame, malign, sue, etc.)

2. as when an act of waiving a claim triggers the ceasing to exist of
   – the disposition to realize the corresponding obligation
   – this obligation itself
How is this possible? How can mere speaking create dispositions?

Because language is a set of dispositions inhering in a society (a linguistic community).

The institutions of promising, contracting, blaming, suing, etc. are themselves dispositions inhering in a society.

A large and representative fraction of members of the society bears dispositions to (for instance) monitor, and to blame and shame those who do not keep their promises, to expect and respect such blaming and shaming, to expect and respect that others will expect and respect such blaming and shaming.
Ontology needs to take care of deontic entities

Ontological approach via social dispositions (customs, languages, practices, institutions, ...)

- Ontology of acts
  - mental acts
  - physical acts
    - Ontology of social acts
    - Ontology of speech acts
      - Ontology of document acts
What is an obligation?

• Ontology of acts
  – mental acts
  – physical acts
  • Ontology of social acts
    • Ontology of speech acts
      • Ontology of document acts
Necessary conditions for: person \(x\) has a (core promise-type) obligation

- There is some society [object aggregate] \(s\)
- \(x\) \(\text{member}_\text{part}_\text{of}\) \(s\)
- There is some competence for obligation-generating [disposition to promise] \(p\)
- \(p\) \(\text{inheres}\) in \(s\) [\(p\) is a social practice], because \(p\) inheres in many (and in typical) members of \(s\)
- There is some act \(a\) realizing \(p\) which \(x\) performs
if \( x \) promises \( y \) at \( t \) then

1. from \( t \), \( x \) has a disposition \( d \) to perform the content of \( a \) (“do F”)

2. \( d \) specifically depends on \( a \) & \( x \) knows that (\( d \) exists and that \( d \) specifically depends on \( a \))

The disposition to perform the content of \( a \) exists in virtue of changes in the brain of \( x \) (it is a genuine disposition in BFO terms)

Compare the case of representative promising, where \( x \) promises to do F on behalf of his company \( y \); here no disposition to do F exists until \( x \) informs \( y \)
x performs act $a$ of promising to $y$ at $t$ →

there is a mutually specifically dependent pair of obligor and obligee roles

obligor role $\text{inheres\_in x}$ & obligee role $\text{inheres\_in y}$

These roles exist in virtue of the fact that

$y$ (AND/OR members of the society $s$) associated with $y$ believe that $x$ performed the corresponding obligation-generating act

What if all memories of $a$ cease to exist? What if all documentation of $a$ ceases to exist?
x performs act $a$ of promising to $y$ at $t \rightarrow$

EITHER $y$ OR members of $s$ associated with $y$

have a disposition at $t^+$ to monitor $a$’s

performance of this content & to blame and

shame $x$ if $x$ fails to perform

This disposition specifically depends on the

belief that $x$ has the obligation, thus on his

having the obligor role, at $t^+$
obligation

\( x \) is an obligation-generating-act =def. \( x \) is a speech act performed by a member of a society in which ritual declarations take place of the form ‘I will do F’ which give rise to dispositions to monitoring and blame in case of failure

\( y \) has an obligation at \( t^+ \) =def. \( y \) performed an obligation-generating act \( x \) at \( t \) in society \( s \) and members of \( s \), as a result of knowing about this act, have the disposition to blame \( y \) in case of failure
obligor role

\( x \) has the obligor role =def. \( x \) performed an obligation-generating act & \( x \) is believed by members of \( s \) to have performed that obligation-generating act

obligation-generating act may be an act of acceptance of an order (e.g. an order for a lab test)
Obligations are created by plans involving multiple agents

x is in charge of a team y (e.g. x is a chief surgeon)
z is a plan specification (e.g. of a surgical procedure)
x commits to using team y to realize z, team y consent
on the basis of GDC z, x’s plan (something in x’s
brain, an intention) – call it $z^x$ – comes into being

x instructs the members of y to do their part, as
specified in z, in realizing this plan

all members of y become obliged to realize this plan
Planning and Commanding

Chief surgeon

- plan specification (GDC)
  - including goal (specification) $g$

- commitment

- plan

- disposition: realize goal by performing specified actions

- realization

- plan execution

- are these the same thing?

- will to realize goal $g$ (sincere intention)

- s depends on

- s depends on
OBI Plan Specification
office creates obligations

to be appointed or elected to an office involves commitment to fulfil the duties of the office
public acceptance of this commitment obligations following therefrom again: there are sanctions for failure to perform (= fulfil duties)
the office is a generically dependent continuant concretized in a succession of authority-roles
what survives during interregna between office-holders is: the documents
kinds of duty/obligation

moral duty (to your children …)
duty required by the member or by the holder of an office in the organization (consented to)
duty whose fulfilment is required by law, employment code, professional code of practice
duty required on the basis of instruction
Prestige vs. Dominance
J. Henrich, F. J Gil-White,


explains prestige processes as an emergent product of psychological adaptations that evolved to improve the quality of information acquired via cultural transmission. Natural selection favored social learners who could evaluate potential models and copy the most successful among them. In order to improve the fidelity and comprehensiveness of such ranked-biased copying, social learners further evolved dispositions to … gain close proximity to, and prolonged interaction with, these models.
J. Henrich, F. J Gil-White,


Once common, these dispositions created, at the group level, distributions of deference that new entrants may adaptively exploit to decide who to begin copying. This generated a preference for models who seem generally “popular.”
E. Francesconi, “A description logic framework for advanced accessing and reasoning over normative provisions”, *Artificial Intelligence and Law* 22, 2014

![Diagram](image)

**Fig. 3** Hohfeldian relations. a Deontic concepts and their relations, b potestative (anankastic) concepts and their relations
**Hohfeldian legal relations**

1. X has the **RIGHT** that Y performs A, iff in case Y does not perform A, X may react with an action R such that Y is negatively affected by R. *(COMMAND)*

2. X has the **DUTY** (OBLIGATION) to perform A for Y, iff in case X does not perform A, Y may react with an action R such that X is negatively affected by R. *(PROMISE)*

3. X has **NO-RIGHT** that Y performs A, iff in case Y does not perform A, X may not react with an action R such that Y is negatively affected by R

4. Y has the **PRIVILEGE** (is allowed) to perform A with respect to X, iff in case Y does perform A, X may not react with an action R such that Y is negatively affected by R

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E. Francesconi, “A description logic framework for advanced accessing and reasoning over normative provisions”, *Artificial Intelligence and Law* 22, 2014

Fig. 3 Hohfeldian relations. a Deontic concepts and their relations
Hohfeldian legal relations in BFO terms

1. X has the RIGHT that Y performs A = Y acquires the role of obligor wrt performing A when X requests/commands that Y perform A; AND X and/or the wider society have the disposition to sanction Y in case of failure to perform;

2. X has the DUTY (OBLIGATION) to perform A for Y = X acquires the role of obligor wrt performing A when Y requests/commands that X perform A; AND Y and/or the wider society has the disposition to sanction Y in case of failure to perform

Hohfeldian power relations

1. X has the POWER to bring about that P (where P is some Legal Relation), iff there exists an action A such that, in case X performs A, P is established.

2. X has the INABILITY to bring about that P (where P is some Legal Relation), iff there exists no action A such that in case X performs A, P is established.

3. P has the LIABILITY of being brought about by X iff there exists an action A such that in case X does perform A, P is established.

4. P has the IMMUNITY of being brought about by X iff there exists no action A such that in case X does perform A, P is established.

E. Francesconi, “A description logic framework for advanced accessing and reasoning over normative provisions”,

Diagram:
- Power → correlative → Liability
- Disability ← correlative ← Immunity
- opposite
- opposite
POWER

Compare Searle on the ontological fecundity of declarations

Not a matter of causality – since not physical changes are involved, but only changes in deontic relations
POWER to bring about legal relations

= having an AUTHORITY-ROLE (commander, director, team leader, hospital manager …)

X has immediate AUTHORITY-ROLE wrt Y =def. the (majority of members of the relevant) society accept that X has AUTHORITY-ROLE over Y
from Reid’s miniature civil society to the Department of State

X has mediated AUTHORITY-ROLE-R wrt Y = def.

X has AUTHORITY-ROLE-R (through employment, appointment, election, promotion …) AND document D specifies AUTHORITY-ROLE-R AND the (majority of members of the relevant) society accept document D

Iterate as needed
Document-ontological foundations of an Org Chart

X has D1-mediated AUTHORITY-ROLE-R1 to appoint/instruct/manage Y such that Y will have D2-mediated AUTHORITY-ROLE-R2

which will enable Y to appoint Z with D3-mediated AUTHORITY-ROLE
Background (mechanisms present in people’s brains, bodies and surroundings)

**Deep Background:** biological skills and universally human capacities, such as eating, walking, and seeing given patterns of perceptual stimuli as discrete objects.

**Local Background:** culturally-bound skills and capacities, such as knowing what culturally-specific objects are for, recognizing culturally-specific situations as appropriate or inappropriate for certain types of behavior, ...

**Documental Background:** codes, documents and document templates (forms), document systems
The Lab Tech sees the order form and completes the order

**Documental Background:** codes, documents and document templates (forms), plus:
document-based systems for recruiting, training, monitoring, promoting, incentivizing, sanctioning, … people so that there brains/bodies are appropriately tuned/sensitized so that there reliable occurs the acquisition of corresponding dispositions with each new documented-mediated role
Duties vs. documents specifying duties

• Legal codes, ethics codes, corporation laws, doctrinal publications
• Contracts (of employment, ...)
• Charters (of a city, a university, a hospital, ...)
• Plan specifications, work orders, ...
  —provide the frameworks within which duties are acquired by participants in complex human actions
Hohfeldian power relations in BFO terms

• 1. X has the POWER to bring about that P (where P is some Legal Relation), iff there exists an action A such that, in case X performs A, P is established.

X has the POWER to bring about that P (where P is some Legal Relation) =def

X has an AUTHORITY-ROLE which is such that, if X performs act A (for instance ordering Y to do F) then legal relation P is established (for instance Y has DUTY to do F)

AND there is a disposition in Y the wider society to accept X’s AUTHORITY-ROLE

Some people can create normative relations in certain sorts of contexts

(Searle: ontological fecundity of language)

In the realization of collaborative plans, the team leader L creates obligations on the part of the team members

But how did L get to be team leader?

And how did L get the POWER (authority) to issue instructions to the team members?
Some people can create normative relations in certain sorts of contexts

We assume: L created the team

But how did L get the POWER (authority) to create the team

(follows complex story about L’s employment contract, grant funding documents, …)
Some people can create normative relations in certain sorts of contexts

1. How did L get the Authority-Role to issue instructions to the team members?

2. Because each member M, when she joined L’s team, consented to follow L’s instructions relating to the performance of the team.

3. Each team member X has the Authority-Role over themselves to bring it about that L has the Authority-Role to issue instructions to them.
Hospital consent form
About Kaleida Health

Kaleida Health is the largest healthcare provider in Western New York, serving the area’s eight counties with state-of-the-art technology and comprehensive healthcare services. Its expert, compassionate healthcare professionals are committed to providing the best possible outcomes and experience for patients and visitors.

More than one million sick or injured patients choose a Kaleida Health facility annually, including Buffalo General Medical Center/Gates Vascular Institute, DeGraff Memorial Hospital, Millard Fillmore Suburban Hospital, and Women & Children's Hospital of Buffalo.

Accredited by Det Norske Veritas (DNV) Healthcare, Inc., Kaleida Health also provides important services through two long-term care facilities, over 80 outpatient clinics, including school-based health centers, and home health care through the Visiting Nursing Association of WNY, Inc. In addition, Kaleida Health’s hospitals support residency training programs of the University at Buffalo School of Medicine and Biomedical Sciences, training more than 700 residents each year.
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Accredited by Det Norske Veritas (DNV) Healthcare, Inc., Nursing Association of WNY, Inc. In addition, Kaleida Health’s hospitals support residency training programs of the University at Buffalo School of Medicine and Biomedical Sciences, training more than 700 residents each year.
NYS Department of State
Division of Corporations
Entity Information

The information contained in this database is current through February 12, 2016.

Selected Entity Name: KALEIDA HEALTH

Selected Entity Status Information

Current Entity Name: KALEIDA HEALTH
DOS ID #: 2090748
Initial DOS Filing Date: DECEMBER 06, 1996
County: ERIE
Jurisdiction: NEW YORK
Entity Type: DOMESTIC NOT-FOR-PROFIT CORPORATION
Current Entity Status: ACTIVE

Selected Entity Address Information

DOS Process (Address to which DOS will mail process if accepted on behalf of the entity)
KALEIDA HEALTH
GENERAL COUNSEL
726 EXCHANGE STREET
BUFFALO, NEW YORK, 14210

Registered Agent
NONE
d1 = application for incorporation  d2 = articles of incorporation,  
d3 = New York State Corporations Law

1. Group of persons g1 submits documents d1 and d2 to 
organization o1 = New York State Division of Corporations:

2. Another group of persons g2, members of o1, following 
specific procedures and exercises its AUTHORITY ROLE 
documented in d3, approves the application d1

3. Ontological fecundity: The corporation o2 comes into 
existence: o2 is an aggregate of persons (initially of the 
persons in g1) with authority-roles, President, Board Member, 
CEO, Director of Oncology … specified in d2
Initially \( o_2 = g_2 + \) those document specified roles

Gradually \( o_2 \) evolves via many further document-mediated steps
1. Director of Oncology has POWER to assign doctor X to treat patient Y

2. Doctor X diagnoses patient Y, and decides patient Y needs treatment Z

3. State ethics laws (?) declare that patient consent is required for treatment Z

4. Doctor X creates a document (fills out a form f1) which creates the CONSENTOR role on the part of Y

5. Patient Y signs f1 which creates the AUTHORITY role on the part of doctor X to perform treatment Z
Plan specifications are information artifacts

To understand what plans are we need to incorporate the factor of oughtness:

The commander has made a plan (selected from alternative plan specifications)

= is committed to the plan
  some parts of the plan are compulsory, other parts are optional
  he has authority to command others to realize the plan ... 
  they become obliged to perform certain actions
  these actions can be more or less in conformity with the plan
  they can be rewarded and punished in light of their conformance
Elements of the planning process

Information artifact elements

Plan development has_output plan specification
Commander performs review of alternative plan specifications
Commander commits_to plan specification #1
Commander’s act of commitment has_output plan #1
Commander has_commitment to realize plan #1 by following the actions specified in the plan specification
Plan is_a disposition
Plan realized_in plan execution
Plan has_goal: future world-state F
Language

There is a language creation and maintenance system (schools, dictionaries, …)

The English language = competences to produce and to process utterances + written linguistic outputs

Maintained in existence by activities of persons in writing and speaking, by documents which serve as standards, by mothers, teachers … with special competences and POWERS
Other kinds of document systems
The Price System

Price maintenance and creation system

Prices (of 1 Euro, of a beer in a Paris bar …)

Individual acts of exchange
The Tax System

What happens when you use Turbotax to fill in your tax forms?

You start with a webform with empty cells
You enter linguistic signs into these empty cells
A new webpage appears
You repeat
What happens in each successive stage is determined by the program (by a combination of physics and mathematics)
The Law System

The law creation and maintenance system (the legislature, local courts...)

The body of law

Individual legal and police actions
The document-driven healthcare system

The healthcare creation and maintenance system (legal bodies, standards bodies, medical schools, hospitals…)

The body of regulations, medical best practice guidelines, …

Individual actions of doctors, patients, …
Main thesis:
the meshing of complex actions of large numbers of people is made possible through

1. hierarchically organized authorities
both resting essentially on

3. the meshing of documents

4. the associated meshing of roles and POWERS
Scott J. Shapiro, “Massively Shared Agency”, 2013

[Bratman, Searle …] ‘are unable to account for the existence of massively shared agency.

they ‘have largely concentrated on analyzing shared activities among highly committed participants. The working assumption has been that those who sing duets or paint houses together are all committed to the success of the activity.’
Shapiro: To adapt standard theory of collective agency to deal with massively shared actions we need to add **authority**

Authorities are ... “mesh creating” mechanisms. When disputes between participants break out with respect to the proper way to proceed, authorities can create a mesh between the subplans of the participants by demanding that both sides accept a certain solution.

Basis for Shapiro’s **theory of the nature of law**
The Searle Thesis

Through the performance of speech acts (acts of promising, marrying, accusing, baptising) we *change the world*

- by bringing into being claims, obligations, rights, relations of authority, debts, permissions, names, ...

How do the obligations created by speech acts

• hold (large and small) societies together over the long term?
In the local case, when you make a promise

your obligation is tied to psychological factors: memories, expectations, your desire to preserve your good name

But what about the non-local case?
Hernando de Soto
Institute for Liberty and Democracy, Lima, Peru
The de Soto Thesis

Documents and document systems are mechanisms for creating the institutional orders of modern societies

With the invention of *documented* claims and obligations

- a new dimension of socio-economic reality comes into existence:
  - bank accounts, stocks, shares, bonds, mortgages, credit cards
These form enduring social networks – document systems – of entirely new types
Hernando de Soto

• first recognized the pivotal role of documents in the ontology of socio-economic reality

• documents enable
  – new types of distributed ownership through stocks, shares, pensions
  – new types of legal accountability
  – new types of business organization
What document act theory is about

• the social and institutional (deontic, quasi-legal) powers of documents
• the social interactions in which documents play an essential role
  – for example allowing post-mortem instructions
• the enduring institutional systems to which documents belong
A musical example

Lux Aurumque
• Eric Whitacre’s Virtual Choir 3.0, 3746 videos from 78 countries
The meshing of actions of over 3000 people in 78 different countries

• most of whom will never communicate with each other

• in such a way as to give rise to a common enduring product to which they all make their separate contributions

• is made possible by law
  – and more specifically, by the meshing of legal documents
Eric Whitacre Virtual Choir 3

TERMS & CONDITIONS

Thank you for planning to be part of Eric Whitacre’s Virtual Choir 3, Water Night, recorded via www.ericwhitacre.com. Any recording you upload through this site (your Performance) is subject to these Terms and Conditions (Terms) so please read them carefully. By recording and uploading your video (your Performance) you are stating that you have read, understood and agree to be bound by the Terms below. Your agreement is with the Producers, Music Productions Ltd (c/o Pinewood Studios, Pinewood Road, Iver Heath, Bucks SL0 0NH UK) on behalf of Eric Whitacre Inc., in respect of Virtual Choir 3 (the Recording).

You confirm that you have made and submitted video footage of your audio visual performance of the composition, Water Night by Eric Whitacre. You hereby give all requisite consents under the Copyright Designs and Patents Act of 1988 (or any re-enactments or amendments thereof) to enable the Producers to edit your Performance together with audio visual material made by third parties to create a new composite Recording as part of the Virtual Choir series.

The Producers hereby confirm that your Performance will not be used in any other way, except as part of the Virtual Choir Recording, without prior consent.

You are responsible for maintaining your equipment and services required to access the recording and upload process for Virtual Choir 3. The data collected about you through sign-in as part of this process will not be shared with any third party for any purpose at all. You agree that any information provided is accurate, current and true, and that you will not impersonate any other person.

As part of this process you agree not to violate any local or international laws, nor transmit any inappropriate, libellous, obscene or non-Virtual Choir related material. In consideration of the Producers agreeing to edit and create the Recording, incorporating your Recording at their sole expense which you acknowledge is a good and valuable consideration, you confirm that the Producers shall be entitled in perpetuity throughout the world and without payment or liability to you, to alter and exploit the Recording in any manner and in all media worldwide. This Recording will be seen on the world wide web, in media coverage of all types (broadcast and other), and as part of installations in visitor centres, galleries and at other public events.

The performer copyright in your Performance remains yours and is not owned by the Producers. The Producers retain the right to remove or refuse any submissions as deemed necessary, with copyright law or other international laws in mind.

The Producers retain the right to change these Terms if necessary, and these will be posted on the Virtual Choir webpage on www.ericwhitacre.com as necessary. If you object to these changes you will need to contact Music Productions Ltd. Continued use of the site indicates your acknowledgement of such changes and agreement to be bound by the terms and conditions.

You are solely responsible for the security of your password and the confidentiality of the account through which you logged in to the Recording process for Virtual Choir 3.

You expressly agree that uploading a Recording is at your sole risk. You agree that your audio and video files will be stored at a destination secured by the Producers, pending and following editing and publication. The Producers are not responsible to you for the loss of any data or any unavailability caused by the Producers or any third party.

By agreeing to these terms and conditions, you understand that to the extent permitted under applicable law, under no circumstances will any of the officers, directors, employees, agents or licensors be liable under any theory of liability for any incidental, indirect or exemplary damages of any known type without limitation. You agree to indemnify and defend these officers, directors, employees and consultants from any claims, liabilities, damages, losses, costs, expenses or fees arising from your (or anyone using your account’s) violation of these Terms.

The content you upload, your Recording, is protected by international copyright laws without limitation. These Terms and the relationship between you and the Producers are governed by British law. These Terms remain in full force and effect in perpetuity.

You warrant that you are entitled to give the above consents, are 14 or more years of age, and thereby agree to grant the rights herein.
To participate in a choral performance with Eric Whitacre you need:

- Performance instructions
- Recording instructions
- Contact form (filled out)
- Choral survey (filled out)

- Video or audio files recording 2-3 selections from within the last calendar year uploaded through YouSendIt dropbox or by email to SingwithEric@DCINY.org

By uploading video or audio files you agree to
... give all requisite consents under the Copyright Designs and Patents Act of 1988 (or any re-enactments or amendments thereof) to enable the Producers to edit your Performance together with audio visual material made by third parties to create a new composite Recording as part of the Virtual Choir series.

... The performer copyright in your Performance remains yours and is not owned by the Producers. The Producers retain the right to remove or refuse any submissions as deemed necessary, with copyright law or other international laws in mind.

... The content you upload, your Recording, is protected by international copyright laws without limitation. These Terms and the relationship between you and the Producers are governed by British law. These Terms remain in full force and effect in perpetuity.
Copyright, Designs and Patents Act 1988

1988 CHAPTER 48

An Act to restate the law of copyright, with amendments; to make fresh provision as to the rights of performers and others in performances; to confer a design right in original designs; to amend the Registered Designs Act 1949; to make provision with respect to patent agents and trade mark agents; to confer patents and designs jurisdiction on certain county courts; to amend the law of patents; to make provision with respect to devices designed to circumvent copy-protection of works in electronic form; to make fresh provision penalising the fraudulent reception of transmissions; to make the fraudulent application or use of a trade mark an offence; to make provision for the benefit of the Hospital for Sick Children, Great Ormond Street, London; to enable financial assistance to be given to certain international bodies; and for connected purposes.

[15th November 1988]

Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

1 Copyright and copyright works.

(1) Copyright is a property right which subsists in accordance with this Part in the following descriptions of work—

(a) original literary, dramatic, musical or artistic works,

(b) sound recordings, films [or broadcasts], and

(c) the typographical arrangement of published editions.

(2) In this Part “copyright work” means a work of any of those descriptions in which copyright subsists.
1 Copyright and copyright works.

(1) Copyright is a property right which subsists in accordance with this Part in the following descriptions of work—

(a) original literary, dramatic, musical or artistic works,
(b) sound recordings, films [F1 or broadcasts], and
(c) the typographical arrangement of published editions.

(2) In this Part "copyright work" means a work of any of those descriptions in which copyright subsists.

(3) Copyright does not subsist in a work unless the requirements of this Part with respect to qualification for copyright protection are met (see section 153 and the provisions referred to there).

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Annotations:

Amendments (Textual)

[F1 Words in s. 1(1)(b) substituted (31.10.2003) by The Copyright and Related Rights Regulations 2003 (S.I. 2003/2498), reg. 5(2) (with regs. 31-40)]

2 Rights subsisting in copyright works.

(1) The owner of the copyright in a work of any description has the exclusive right to do the acts specified in Chapter II as the acts restricted by the copyright in a work of that description.

(2) In relation to certain descriptions of copyright work the following rights conferred by Chapter IV (moral rights) subsist in favour of the author, director or commissioner of the work, whether or not he is the owner of the copyright—

(a) section 77 (right to be identified as author or director),
(b) section 80 (right to object to derogatory treatment of work), and
(c) section 85 (right to privacy of certain photographs and films).

Descriptions of work and related provisions

3 Literary, dramatic and musical works.

(1) In this Part—

"literary work" means any work, other than a dramatic or musical work, which is written, spoken or sung, and accordingly includes—
Orchestral score with staves
The Modularity of the Orchestral Score
The actions of the players in an orchestral performance

- are intermeshed through the sets of intermeshed documents we call orchestral scores

These documents are **plan specifications** (sets of instructions for playing instruments)

The conductor provides the authority

- to initiate commitment, thus to create a plan from a mere plan specification
- to resolve disputes which arise along the way, for example as to interpretation, tempo, ...
Scores bring it about that specific obligation series are distributed in coordinated fashion across large groups.
players actions are coordinated and steered through time through conductor’s actions combined with intermeshed sets of instructions
Massive shared agency presupposes modularity
Modularity of Orchestral Score
reflects modularity of orchestra
The Navy General Command was established to unify the tactical command over all the fleets as well as the General Staff Command and the naval districts. Admiral Seiyu Yukio, C-in-C of the Combined Fleet, was appointed Chief of the Navy General Command (concurrently). On 29 May 43, he was succeeded by Vice Admiral Itsuo Ozawa in this command role. With the advent of this appointment, the situation arose whereby the C-in-C of the Southwest and Southeast Area Fleets continued as they were. In this regard, it is inevitable that these two Area Fleets were removed from the Combined Fleet and placed under the direct command of Imperial General Headquarters.

Inclusive dates in each box indicate the respective unit's position in the chain of command for that period. Detailed, transcribed or reorganized units are grouped and placed in their proper positions for the period designated. In boxes where space is limited.
Authorities involved in maintaining the division of orchestral deontic labor that is involved in a symphony concert:

Conductor
Orchestral section leaders (First violin ...)
Rehearsal (drill) manager
Orchestra manager
Concert hall manager
~ Composer
  – exerts authority only as mediated through the score
Documents involved in maintaining the division of orchestral deontic labor

scores, sub-scores
contracts

between

orchestra manager and conductor
orchestra manager and players
concert hall manager and orchestra manager
concert hall manager and audience members (tickets)

laws, including

copyright law
laws governing public assembly
laws governing employment contracts
laws governing sale of tickets
documents hold together the executions of horizontally and vertically meshed subplans through *drill*

*drill*, too, is modularized based on individual and small group practice all the way up to full orchestra rehearsal
How to do things with scores

1. the author authors the score, thereby creates a possibility of performance, and thereby creates the work
2. conductor and orchestra use the score as the specification of a plan (with subplans) and commit themselves to its execution,
3. the orchestra members committing themselves to accept the authority of the conductor
4. they use the score in to rehearsing the execution of their plan (develop score-coordinated expertise through drill)
5. they schedule a concert, thereby making a commitment to each other, to their employer, and to a prospective audience to perform that work
6. they perform the work
Searle: Directions of fit

- **world-to-mind**: a plan is formulated to change the world (to make it conform to the mind of the planner ...)
- **mind-to-world**: an assertion is about something in the world
- **automatic mind-to-world-and-world-to-mind**: I say “I promise to pay you $100 dollars” and thereby make it true that *I promise to pay you $100 dollars*
planning directions of fit

- **world-to-plan**: the plan tells the world how to shape itself to create actions that are in conformance with the plan and thereby achieve the plan objective.

- **plan-to-world**: the plan specification, when the execution is completed successfully, serves as a record of this execution.

- **automatic plan-to-world-and-world-to-plan**: the commander commits to a given plan specification and thereby brings into being a plan that is precisely in conformance to this specification.
It is a profoundly erroneous truism, repeated by all copy-books and by eminent people when they are making speeches, that we should cultivate the habit of thinking what we are doing. The precise opposite is the case. Civilization advances by extending the number of important operations which we can perform without thinking about them.
directions of fit for documents

- **world-to-mind**: a plan is formulated to change the world (to make it conform to the mind of the planner ...)
- **mind-to-world**: a report is published evaluating the success of the execution of the plan
- **automatic mind-to-world-and-world-to-mind**: Act of Parliament is published declaring that such-and-such is the law and such-and-such is the law
Living Blueprint

what begins as a plan
ends as a record
• of process
• of product
Blueprint associated with multiple series of documents with deontic powers

chain of commitments
- from order
- to blueprint creation
- to acceptance of blueprint
- to process of building in accordance with blueprint
- to acceptance of finished building
Plans will be modified along the way

- physical changes to the building to meet building codes
- changes in materials/suppliers
- changes in allowed physical processes
- changes in administrative (approval) processes
Documents with different directions of fit become intermeshed through being stapled together over time.
Second main thesis: there is a division of deontic labor effectuated through the medium of intermeshed documents, which allow the deontic effects of episodic acts to be extended through time.
Drill

Planning system works only by building on routine action which those who will be charged with executing the plan can be relied on to perform automatically.

Planning goes hand in hand with training.
scores and subscores / plans and subplans also allow training (rehearsal = pretend realization of a plan in advance of actual realization)
it takes practice also to understand how to interpret and follow the instructions of the conductor
we need training (drill) in order to learn how to execute diagrams
How to do things with documents

• An orchestral work (as something that can be rehearsed, performed and re-performed)
  – could not exist without a score
  – could not be rehearsed without scores and subscores
  – could not be performed without (either) scores or rehearsal
Deontic Entities

Two examples from the biomedical domain

- Licenses
- Consents
Informational Entity

*license*

provides information

*act of granting license*

establishes rights

establishes obligations

establishes punishments for

  infringement of terms of license

establishes expectations that these

  punishments will be incurred in case

of failure to respect these terms
Open Source Licenses

Open source licenses define the privileges and restrictions a licensor must follow in order to use, modify or redistribute the open source software.

Examples include Apache License, BSD license, GNU General Public License, ...

The proliferation of open source licenses is one of the few negative aspects of the open source movement because it is often difficult to understand the legal implications of the differences between licenses. (Wikipedia)
How to create a common representation of the entities in the domain of contracts and licensing?

By following the strategy of the Gene Ontology

Examine the instances in reality – laptops, labels, actions of signing contracts – and their interrelations

For example distinguish license *template* from *license* (correctly filled-in, approved, registered, …)
Basic rule of evidence-based ontology

All terms in an ontology must have instances in reality
Ontologies must be anchored to reality through these instances
We anchor the ontology of information entities through human acts of using language, through documents, through acts of entering data into a registry ...
Open Source Licenses

Open source license is a generically dependent continuant (compare: protocol in *Nature Protocols*)

The license signed by John and Jim, a specifically dependent continuant whose bearer is (say) a specific piece of paper

The signed piece of paper is a concretization of the (generically dependent) license
Some obligations are GDCs because (writing allows) you to pass on your obligation to someone else
Compliance management ontology – a shared conceptualization for research and practice in compliance management
Norris Syed Abdullah, Marta Indulska, Shazia Sadiq
Figure 6: CoMeM: showing first, second and third tier constructs.
<table>
<thead>
<tr>
<th>Definitions</th>
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<tbody>
<tr>
<td>Management</td>
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<tr>
<td>A holistic management approach focused on aligning all aspects with the wants and needs of clients. It promotes business efficiency while striving for innovation, flexibility, and integration.</td>
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<td>Set of coordinated activities designed to accomplish a particular outcome.</td>
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<td>Measurable result or state a particular process is intended/required.</td>
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<td>A single logical step in a business process.</td>
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<td>Constraints and conditions imposed on a particular process.</td>
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<td>Continual checking, supervising, critically observing or determining the process in order to identify the occurrence of changes, error, inefficiencies and bottlenecks.</td>
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<td>A systematic approach to help an organization optimize its understanding to achieve more efficient business outcomes.</td>
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<tr>
<td>The way the organization cultivates compliance culture.</td>
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<tr>
<td>The values, ethics and beliefs that exist throughout an organization.</td>
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Definitions

The obligations, either in form of a standard or a code of practice, adopted or accepted by a particular organization or industry.

Documented codes of ethics, codes of conduct, good practices and that an organization has adopted for its operations.

A statement of recommended practice developed internally by an organization or by an international, national or industry body or other organization.

A series of activities that, when combined, are intended to achieve a desired level of compliance.

The systematic way of identifying organizational compliance obligations and the way in which they impact on its activities, products and services, in a manner that is consistent with the organization’s compliance objectives and its commitment to compliance.

The observation mechanisms set up and performed by an organization.
Definitions

Services refer to assistance provided to the regulated organisation either internally or externally in ensuring the organizational fulfill their compliance obligations. Services include compliance related services namely assurance and advisory.

Services undertaken to assess a regulated organisation’s adherence to its compliance obligations.

Services undertaken by organisational auditors to assess a regulated organisation’s adherence to its compliance obligations.

Services undertaken by third party or independent auditors to assess a regulated organisation’s adherence to its compliance obligations.

Guidance provided to facilitate an entity in deciding and implementing a compliance program (initiative). Advisory services may come from the organisation (internally acquired) or may be provided by advisory service providers.

Sets of guidelines and support provided by compliance experts in order to establish, implement, manage, monitor and review a compliance program.