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The Category of Glue

Is there any glue to stop the decline of Western culture?

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The economical question is: *Can we still afford to glue interactions together?*

The category of glue isn't blue. Categories are clueless to interaction and are banking unsecured resources.

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### Categories of the RK-Archive

# The Category of Glue

## Is there any glue to stop the decline of Western culture?

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Abstract

A typology of different categories of glue (ordinary, super-, para-, proto-, trans-glue) are glued together with different strategies of gluing (set and category theory, combining logics, bi-category with (co)spans, polycontexturality and diamond theory). Interpretations of "interactional glue", "nerve glue", "logical glue" are sketched. Keywords of the dissemination of the concept of "glue" in history (Hegel, Marx, Lenin, Gunther, Derrida, Obama) and strategies (Glue, Opium, Mediation) of gluing them together under a general parapluie (ontology, society, solidarity, fear) are critically sketched.
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## How good is Portuguese Glue?

The best quality of Portuguese Glue is accessible, for an affordable prize, at the Logic Shops for Combining Logics in Lisbon, Portugal.

Everything, that doesn't fit together by nature can be glued by categorical glue. Best selling products, at the time, are the *"(co)-span"* articles by José Luiz Fiadeiro.
Without doubt, José's glue, especially his *"interactional glue"*, is one of the most elaborated and purest form of glue on the market. Glue, today, is highly important. It always was. To feel save and gluish it is crucial to use only the finest glue available.

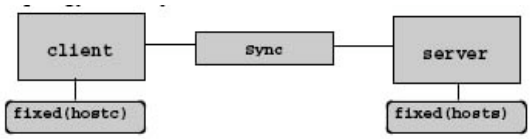
"We found out Portuguese glue is very good! LOL"
PlanetGeorge Forums
The Place George Michael Fans Call Home
http://planetgeorge.org/Forum/viewtopic.php?t=3552

Such a high quality has its own tradition of expertise.
Much was imported from the San Diego Zoo, California, USA. Other decisive work had been done by the scholars at place. They also had the opportunity to be guided by Brazilian specialists. As usual with success stories, there are hidden, well superseded sources, too.

Thus, the new product of combining and gluing is now available as the glue with the magic label "(co)span".
*To span* has a temporal aspect and *span* is has metric determination of an inter-space or gap.

> "In order to make interconnections independent of the nature of components involved, interaction protocols are formalized not in terms of morphisms (i.e. part-of relationships) but a generalized notion of (co-)span in which the arms are structured morphisms - the head (the glue of the protocol) and the hands (the interfaces of the protocol) belong to different categories, the category of glues being coordinated over that of the interfaces."
>
> "The "semantics" of the protocol is provided through a collection of sentences - what we call *interaction glue* - that establish how the interactions are coordinated. This may include routing events and transforming sent data to the

format expected by the receiver.



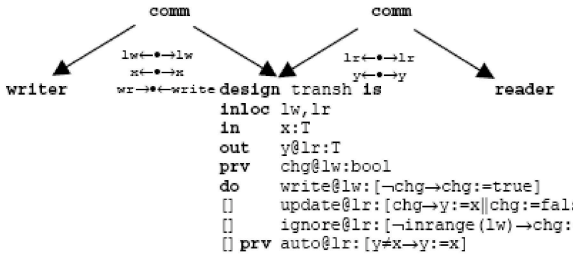

"In this way, it is specified that components *client* and *server* are bound statically to the network nodes identified by *hostc* and *hosts*, respectively. In what concerns the connector *Sync*, namely its *glue*, our design decision was to keep it location-transparent. This choice is justified by the fact that sync does not perform any *computation* but simply provides a pure *coordination* function just like an ideal, neutral "cable". ( ibid. p.10)

This form of transient sharing can be modelled through the binary coordination connector TranSh with roles writer and reader and the glue *transh*.

```
design writer is                    design reader is
inloc lw                            inloc lr
out x@lw: T                         in y: T
do wr@lw:[true → x:∈T]              do read@lr:[true →skip]
```

The roles define the behaviour required of the components to which the connector can be applied. For a writer, we require an action that models every kind of possible operation on x. For a reader, we require an action that models the access to the input variable y. This is because it is essential to know in which location this action is executed.

The glue ensures that updates to x are propagated to y whenever the reader and the writer are in contact with each other. Whenever the communication between the two components is possible, transh prevents the writer from writing x before the previous change of x has been propagated to y. In the other situations, lr is not in the range of lw and, hence, y remains with the value of x at disconnection time.
On re-connection, the value of x is sooner or later propagated to y. This is achieved through the execution of the action auto that is private to transh and, hence, subject to fairness requirements." (p.12




On how Distribution and Mobility Interfere with Coordination
Antónia Lopes and José Luiz Fiadeiro
http://homepages.di.fc.ul.pt/~mal/papers/wadt02.pdf

Earlier on we had to do it with buffers. Buffers are definitively quite conservative. They are conserving messages, buffers them, to help to connect different processes or even one process only, connecting it with itself.

Buffers are not only conservative but passive too. Buffers, like glue, are not computational objects with own activity but computaionally inactive storage places.

**Separation between computation and interaction**
"This is why it is so important to put the notion of interaction at the centre of research in software-intensive system modelling, and to support methods and languages that *separate* interaction concerns from *computational* ones." (p. 194)

"In the past, we developed a categorical framework supporting the *separation* between "*computation*" and "*coordination*" as architectural dimensions in software development [9].

Because we want the application of interaction protocols to be "agnostic" to the nature of the computations that are performed by the peers, we want that the protocol be based on the interfaces that components have available for

> interacting with each other, not on the computations that they perform locally. This suggests that the interactions should be established between objects of a category of interfaces, not between behaviours." (p. 195)

> "The extension is motivated by the fact that, whereas we want the interaction protocol to use a rich formalism to specify the coordination mechanisms superposed by the glue, its interfaces should be purely "syntactic" so as to avoid any assumption on the computations performed by the entities being interconnected." (p.207)

Like buffers, glues are important procrastinators. They stop the direct interaction between agents to secure message passing.

As in politics, everything has to be delayed, delegated to avoid collision of direct actions. Differences have to be overcome by respect and solidarity. Committees are organizing such 'generosity' of the ruling forces in power.

On the level of artificial interaction, say between computer systems, software supported services, etc., *direct* interaction has to be avoided. Computer scientists and administrators enjoy building walls and barriers between systems or agents who are considered to interact.
Such barriers are not only separating and slowing down communication, they are also actively or sometimes passively helping it to happen.
Buffers are one strategy, belonging to their world message passing.

Portuguese glue is another strategy. Much more modern, more general and better polished.

Nevertheless, the notion *glue* is not necessarily connected with the notions 'flexibility', 'dynamics', 'liveliness' of interaction and the autonomy of interacting systems.

So, what is the problem?

The question is: *Can we still afford to buy the glue?*

Glue is procrastinating, buffering, consuming time and resources.

Do we need glue? We surely need interaction.

> "This is why it is so important to put the notion of interaction at the centre of research in software-intensive system modelling, and to support methods and languages that separate interaction concerns from computational ones."

That's what the catalogs are telling us. And we agree. We have no chance to deny or reject the importance of *interaction* and *interactivity*. For social systems and for "soft-ware-intensive systems", too.

There are other, serious problems involved with the social glue strategy.
Not everything can be glued together. The parts to be glued need to be structurally similar to fit together. In a further metaphor, we cannot easily glue together water and steam or nerves and thoughts.

Also politicians want us all to glue together in the *"one world, one peace, one family"* eschatology. Others are gluing themselves together into the phantasm of *"one rationality, one reality, one formalism"*.

Hence, glue is not only resource-expensive but also leveling and eliminating differences. Glue is *homogenizing* heterogeneity.
This, easily, could be in conflict with the idea of social interaction.|
Hence, if, as in the glue paradigm, the interaction protocols of *role* $A_P$ and *role* $B_P$ are glued together with $glue_P$, then there is not much left for an interactional autonomy of A and B.

In fact, this scheme and strategy is what we are told since ever. E.g., communication theory or linguistics, semiotics, etc., for two agents to communicate, they have to share a common sign repertoire. Or, to avoid the danger of liveliness of multi-cultural life, you have to learn the official common language, i.e. the language of

your political asylum.

I stopped to buy the story of the glue miracle.
There is simply no need to have glue in the head and between the fingers.

It's good fun to have the head and the hands in different categories.
But why not jump?
Glue is a bad Ersatz for jumps. Satz, in German, also means jump. There is Ersatz-glue but no Ersatz-Satz.
Like the term "buffer", "jump" sounds much too conventional. Worst case: jump from-to in Basic.
Hence, let such a trans-categorial/categorical jump be called *"saltition*" (sault, sauter, salto).

We have to learn to dance.
Therefore, the new service is not a product, like glue, but an *activity*. In fact, an *interactivity*, i.e a *strategy of interactionality*.

At first, lets learn to jump from the head of a category to the body of a saltatory. Use your hands! But there is no need for that. It might be adventures, but it isn't dangerous.
For beginners, we could compromise to jump form one category to another category of a bi-category, then for advanced to a tri-category and more. This is safe. No abyss to overleap.
And, it's not the size of the system, that counts but *"the number and intricacy on the interactions in which they will be involved"* into the game of *"social complexity"* (Fiadeiro).

# The glue of social complexity

"The complexity involved in building the software components that will be deployed in such systems in not so much on the "size" of their code but on the number and intricacy on the interactions in which they will be involved, what in [6] we have called *social complexity*.

This is the motivation for studying the properties of structures of the form
<πA,G,πB>, which we call *structured co-spans*. More precisely, our aim is to define
and study the properties of a bicategory whose objects are signatures and whose 1-cells consist of interaction protocols."

Indeed, without the computational aspects of the *glue* it would not be possible to coordinate the interactions between n and m. That is, co-spans in SIGN are not expressive enough to formalize interaction protocols.

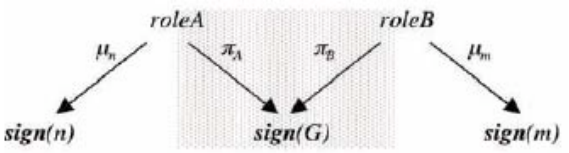
The basic difference is that it does not make sense to see software-intensive systems as being compositions, in an algebraic sense, of simpler components. There is not a notion of *whole* to which the *parts* contribute but, rather, a number of autonomous entities that interact with each other through external connectors.

Where we differ is in the idea that there is a *"system under consideration"*, conceived
a priori, that services crosscut. If we take one of the accepted meanings of 'system' - *a combination of related elements organised into a complex whole* - we can see why it is not directly applicable to SOC: services get combined at run time and redefine the way they are organised as they execute; no 'whole' is given *a priori* and services do not compute within a fixed configuration of a 'universe'.

Whereas in CBD component selection is either performed at design time or programmed over a fixed universe of components, SOC provides a means of obtaining functionalities by orchestrating interactions among components that are procured at run time according to given (functional) types and service level constraints.(deduct, p.3)

According to [2], an architectural connector (type) can be defined by a set of roles and a *glue* specification. For instance, a typical client-server architecture can be captured by a connector type with two roles - client and server - which describe the expected behaviour of clients and servers, and a *glue* that describes how the activities of the roles are coordinated (e.g. asynchronous communication between the client and the server)." (Cat, p. 158)

A ***bicategory*** V consists of :
• A class | V | of objects (also called 0 – cells)
• For each pair < A, B > of *objects*, a *category* V (A, B) whose objects are called *arrows* (or 1 – cells) and whose morphisms are called 2 – *cells*
• For every triple < A, B, C > of objects, a *composition* law given by a (bi) functor
; A, B, C : V (A, B) × V (B, C) → V (A, C)
• For every object A an *identity* arrow $1_A$ : A → A.




## *Glue as a bureau d'exchange*

**Interaction, not composition**
*"There is not a notion of* whole *to which the* parts *contribute but, rather, a number of autonomous entities that* interact *with each other through external* connectors.*"*

How is are interactions connected?

*"... a typical client-server architecture can be captured by a connector type with two roles - client and server - which describe the expected behaviour of clients and servers, and a* glue *that describes how the activities of the roles are coordinated ..."*

interaction = {entities, connectors, glue}
*What* is interacting? Autonomous entities!
*How* are activities coordinates? Glue!
*Which* is the expected behavior? Connector!

Interaction is understood as a composition of actions hold together by glue. Interaction, hence, is not a basic term as it should be after the proclaimed intention, but action. And inter-action is a derivative concept build by the composition of actions.
This is in correspondance with nearly all approaches to interaction (Mario Bunge, Goguen, Kohout).

> David Hestenes writes in the tradition of Mario Bunge:
> "The properties of things are of two general types: *intrinsic* and *interactive*. Intrinsic properties belong to the thing by itself, while interactive properties are shared with other things.
> The descriptors of interactive properties are called interaction variables or just interactions. A thing that acts on another thing is called the *agent* of the action. Two things that act on one another are said to *interact*. Thus, *interactions* (Also called *connections*, *links*, *bonds*, or *couplings*) are mutual (or shared) properties of things. Interactions influence (change or constrain) the *object variables* of a thing according to natural laws."
> David Hestenes, MODELING is the name of the game
> http://modeling.asu.edu/R&E/ModelingIsTheName_DH93.pdf

# Gluing things together

## History of glue and gluing

Glue is universal. And the *gluons* are holding this universe together.
(Google offers 25,400,000 entries for glue.)

**Glutination**
Glue is a universal substance or even the substance of the universe. The activity connected to glue is gluing. Glutination is the category of gluing. Glutination is "The act of uniting with glue; sticking together."
http://www.thefreedictionary.com/Glutination

**Agglutination**
Agglutination is the clumping of particles. The word agglutination comes from the Latin agglutinare, meaning "to glue to."

Glue is very closely connected with the history of mankind. Glue glued not only groups together but glued things together to build tools to enable groups to glue together.

Glue is produced from nature: plants, animals, from human beings or synthetically.
Glue is a metaphor, a concept, a name, a programming language.
There are more than 26 million Google entries for Glue.

**ultimate glue**
"Why is sex the *ultimate glue*? Why is it so important in a romantic relationship? In a nutshell, sex is glue because it is the one that makes your romantic relationship unique from all the other relationships in your life."
http://drseth.blogspot.com/2008/10/why-sex-is-glue.html

Conceptual Glue (E. Margolis 1999)

**glue -** Collaborative International Dictionary of English v.0.48 :
Glue \Glue\ (gl[=u]), n. [F. glu, L. glus, akin to gluten, from gluere to draw together. Cf. Gluten.]
A hard brittle brownish gelatin, obtained by boiling to a jelly the skins, hoofs, etc., of animals. When gently heated with water, it becomes viscid and tenaceous, and is used as a cement for uniting substances. The name is also given to other adhesive or viscous substances.
[1913 Webster]

**Glue** \Glue\, v. t. [imp. & p. p. Glued; p. pr. & vb. n. Gluing.] [F. gluer. See Glue, n.]
To join with glue or a viscous substance; to cause to stick or hold fast, as if with glue; to fix or fasten.
[1913 Webster]

> "This cold, congealed blood
> That glues my lips, and will not let me speak." - Shakespeare.
> [1913 Webster]
> http://onlinedictionary.datasegment.com/word/glue

Next to the material history of glue and the techniques of gluing there is also a short story of *conceptual* glue and gluing.

**Hegel**
"The 'glue' that binds the world together is, in Hegel's view of the matter, not the eternal falling apart of objects, but simply their necessary interconnectedness; if you attempt to separate them, they will not stay put. Nor is it that negation which disintegrates the universe that Hegel uses as the '*mortar*' to combine it; it is that

negation which, because it is as much positive as negative, does actually combine it. After all, it would appear that one is forced to admit that Hegel is more than a superficial thinker trying to palm off on a long-suffering public palpable absurdities."
http://www.gwfhegel.org/Books/TR3.html

**Marx**
"Religion is the sigh of the oppressed creature, the heart of a heartless world, and the soul of soulless conditions. It is the *opium* of the people."

Religion: The Glue That Binds Society Together".

**Lenin**
"Die Religion ist das Opium für das Volk. Die Religion ist eine Art geistigen Fusels, in dem die Sklaven des Kapitals ihr Menschenantlitz, ihren Anspruch auf ein auch nur halbwegs menschenwürdiges Dasein ersäufen."
http://www.vulture-bookz.de/marx/archive/quellen/Lenin~Opium_fuer_das_Volk.html

**Sniffin' Glue: the Essential Punk Accessory**
**"**The Baiti association says 98% of children living on the streets in Morocco are now addicted to *sniffing glue* and the number is growing."
http://news.bbc.co.uk/2/hi/africa/4113441.stm

**Money**
"Money as the medium of exchange is the glue of society, for society is sociated by human action, by human practice in living with one another. Monetary value is abstract usefulness which is understood by human understanding within the practice of trading, i.e. commodity exchange, and thus 'holds everything together'."
http://192.220.96.165/untpltcl.html

**Heidegger**
Heideggerian continental philosophy and naturalistic cognitive science need not be mutually exclusive and shows further that a Heideggerian framework can act as the *"conceptual glue*" for new work in cognitive science. In _Reconstructing the Cognitive World_, Michael Wheeler
http://www.citeulike.org/user/TomQ/article/3444021

**Gunther's Hide Glue**
I haven't found any glue in Gunther's work. In a dialectical and cybernetical turn, Gunther calls what others would call glue "mediation" (Vermittlung). His *Theorie der Vermittlung* is realizing a tabular connection of complexity and complication of logical systems (place-valued and context-valued logics) with over-/under- and balanced constellations. The complexity of holding together is hidden by the *Hide Glue* and well fibred by *Fibrin Glue*.

**Heinz von Foerster**
"The question of applications in the social sphere was a problem to which I was attracted quite early on. I and my friends always regarded the social problem as having to do with the possibility of a linguistic connection. We saw language as the *glue* that forms a society. [...] Language makes second-order communication possible.

Interview with HvF, 26 November 1999.
http://bcl.ece.uiuc.edu/mueller/index.htm#fn45

**Derrida**:
Harold G. Coward, Toby Foshay, Jaques Derrida:Derrida and Negative Theology, 1992, § The Deconstruction of Buddhism
"It is because we see the world as a collection of discrete things that we superimpose causal relationships, to "*glue*" things together." David Loy, p. 247

**Glue, a challenge**
"*Tabbi*: Could you deconstruct Glue for me?
*Ulmer*: One of the first things that fascinated me about Derrida was the theory of the signature. The relation of the proper name to individual historical experience was an obvious place to test some of the poststructural claims about the place of chance, (non)motivation of language, and the like. The experiments that led to mystory and choragraphy began with the exploration of my own signature. Notions of fate have given way to the constructed subject; but still the proper name provides an anchor, a ground upon which identity may constellate.

"In Glas Derrida devotes considerable attention to the phenomenon of agglutination, and speaks of the gl and

the glu.

"This theory resonated with the phrase used by peers to tease me in grade school (generating Elmer's Glue from Ulmer). My interest in arts using collage equaled my interest in theory: the art of collage has been defined as the art of gluing. One negative review described Applied Grammatology as sticking to Derrida like glue.

My initials are G.L.U. + the French silent e. The properties of glue are suggestive of my concern with group formation, with a certain kind of community creation. I have not done a full examination of the vehicle. I use glue online, usually in a MOO setting, but also in e-mail. Students often remind me about how glue is made. I have not thought about the implications of that yet."

**Glas**, 195-196b
by Jacques Derrida
"I forgot. The first verse I published: 'glu de l'étang lait de ma mort noyée' ('glue of the pool milk of my drowned death')."

And for poeple like us:
"Fear is the glue that binds these structures."

Moreover, since philosophy is the glue, the deep structure, that holds so many things together, its critique has ramifications that open up numerous areas of struggle. p.195

**Web 2.0: Obama**
*Obama*: "I'm rubber. You're Glue. Whatever you say...."
Rubber and Glue
Super Glue

**Glue2.0**
"You are summing up exactly the value of Glue - semantics is on the background doing its magic, but the really important thing is new way for people to connect - in the context, without friction."
http://www.zachbeauvais.com/archives/glue-sticks-stuff-together/
http://getglue.com/

**More glue**
glue - Free On-line Dictionary of Computing (26 May 2007) :
***glue***
<jargon> A generic term for any interface logic or protocol
that connects two component blocks.
For example, Blue Glu is IBM's SNA protocol, and hardware design
ers call any thing used to connect large VLSI's or circuit blocks
"glue logic" b(1999-02-22)
http://onlinedictionary.datasegment.com/word/glue

**Like glue, too.**
http://uk.youtube.com/watch?v=iLQ__fc7_jU

**Semiotic glue**
"... he plays well but, man!, with the WRONG technique
the piano is the most stationary of instruments, if one excepts the church organ
the chords played are just plain UGLY
the ladies morning musical club would be shocked
you need a kind of *semiotic glue*
i was lamenting about the fact that maybe the surface was TOO dissonant call it fauré, call it sorabji..."
http://pages.infinit.net/kore/contrepoint.html

A glue language is a programming language (usually a scripting language) used for connecting software components together.

Glue semantics. Glue logic.

Nerve glue.

**Tautological glue**
"The cultural *glue* that holds America together, **Bertrand Russell** said, is Americanism."

**Cultural Glue**
"Digital codes work as cultural glue through space and time."
http://www.nbi.dk/~emmeche/coPubl/91.JHCE/codedual.html

**Glue or Cement?**
"Normally, an organization consists of an architecture being the *cement*, or the *glue* between many agents. The levels of complexity of architectures and agents define the complexity level of the organization. Agent sorts can be discerned regarding the presence or absence of the following components: perception, interaction (including learning in the sense of habit formation), representation (including learning in the sense of chunking) and autonomy."
http://www.rug.nl/staff/h.w.m.gazendam/semiotics,_multi-agent_systems_and_organizations.pdf

**From glue to gluons**
"These forces, which "glue" the quarks together in "white" bundles, are mediated by field-quanta that are called *gluons*, which like photons are massless spin-1-particles. As a force between two quarks act between 3-3 colour-combinations, one should think there would be 9 different gluons, but it turns out that the photon is hiding among these combinations, so there are only 8 gluons."
http://www.library.utoronto.ca/see/SEED/Vol3-2/Christiansen_3-2.htm

Or simply: GLUE

Glue from animals, from human beings or synthetically. But there is also mental glue, conceptual, structural and algorithmic glue.

The glue of language. The language of glue. Language as glue and glue as language. The language GLUE.

And finally:
***Glue*** is a novel by Scottish writer Irvine Welsh.
"Glue tells the stories of four Scottish boys over four decades, through the use of different perspectives and different voices. Glue addresses sex, drugs, violence, and other social issues in Scotland, mapping "the furious energies of working-class masculinity in the late 20th century, using a compulsive mixture of Lothians dialect, libertarian socialist theory, and an irresistible black humour." The title refers not to the abuse of adhesives, but the *metaphorical glue* holding the four together through changing times."

It's a never ending story. At least: There is no mankind without glue.
Scots are spelling glue as "glü" with a long "ü", hence "glüh". Like in German: "Glühbirne". There is without doubt a lot of linguistic glu(e) between glüh and glue. One is called Scottish Enlightenment.

The real story is here:
http://www.taz.de/1/zukunft/umwelt/artikel/1/verehrt-verraten-und-vergluehT/

**Glue as Leim**
Nevertheless, the whole story of Glue would get a different turn if it would be told in German language, with the help of the key words: Leim, Schleim, Heim, Keim. Verbindung, Binder, Blinder and Kleber.

A strong linguistic neighbor of glue is "clue". The glue of cryptography.

"Glue everywhere. As Bertrand Russell cleverly put it in one of his treatises, glue is a very sticky business. "
http://judgemental.merseyblogs.co.uk/2007/08/someones_been_court_out.html

## ■ Typology of glue

Glue is gluing. It glues things or persons or thoughts or whatever together. There are some degrees of distinctness in the process of gluing to observe.

Parts to be glued might belong to the same category of things. They might be of the same ontological species.

Such a species might be concrete, like classical objects, or it might be abstract, like classical concepts or models. Such an approach is well modeled by set theoretical concepts.

If the focus is more on the inter-relation between things and concepts and not as much on their content, category theoretical concepts and methods are well applied.

Both approaches, set and category theory, are belonging to mono-contextural thematizations. Both are based on simple dichotomies: element/set and object/morphism both belonging to one and only one universe or "conglomeration", hence mono-contextural.

If things are slightly more different and not automatically commensurable, bi-categories are at place. They still are at home in one universe. And their gluing power is restricted to glue together the two categories of bi-categories. Or later, for more complex constellations, n categories of n-categories. Still, under the umbrella of a unifying conglomeration. Hence, in fact, super-glued by the unique conglomeration.

*Set theory* and *category theory* are working with ordinary glue, called first-order glue. It would be unfair and misleading to call it super-market glue.

Because things, interactivity, are highly dynamic, different levels of consistency and coherency of the state of glue have to be considered:
hard vs. soft,
stable vs. elastic,
uniform vs. gasiform,
constant vs. scaling,
etc.

Interactivity is an ever-changing event, glue has to be able to adapt to the changing circumstances of gluing actions together.

The super-glue of n-categories is gluing together the gluing power of 1-categories.
For both, the rules of the gluing power are simple: No glue is a glued, and no glued is a glue. TND.

*Advise how to use superglue*
http://www.metacafe.com/watch/46663/super_glue

*Polycontextural* theories are more split and poly-phrenic. Awful things happens. Not only there is differentness between conglomerations to be glued, there is also no glue that could glue together such conglomerations, that are, as it was mentioned, the umbrellas for n-categories and their own gluing strategies. Much worse, what is gluing conglomerations together might turn out to be itself a conglomeration and conglomerations might play the role of glue. Such a non-glue glue isn't a superglue nor a crazy glue.
But a proto-glue, the glue before the glue, in general. What's before the glue is the abyss. And *proto*-glue is the jumping device to jump in-between the gaps of differentness, hence its real market-label is *trans*-glue, the glue beyond/between the glue.

**Proto-glue**
"Like Ozu's later *An Inn in Tokyo*, this one is at its best when it proceeds to indulge in moments of a proto-glue sniffing aesthetic, which is essentially my own term for gritty and surreal (think Herzog) moments of humor."
http://cinematalk.wordpress.com/2008/07/21/

In the case of diamond theory, not only the well known types of glue, like glue-glue, meta-glue, super-glue, proto- and trans-glue, are gluing glues together but, at once, antidromically, to each gluing, of whatever type, there is also an un-gluing gluing gluing.

First-Order Glue

"Glue has evolved significantly during the past decade."
"Glue (Dalrymple, 1999), a compositional semantics framework based on linear logic (Girard, 1987) has evolved over the years."
Miltiadis Kokkonidis, Glue as the Syntax-Semantics interface
http://users.ox.ac.uk/~lina1301/Kokkonidis06c_icttl_simplefog.pdf

**Meta-level gluing**

*1st-order gluing*:
Gluing of elements, sets and also gluing of categories shall be called 1-order gluing, i.e ordinary or real gluing.
*2nd-order gluing*:
N-categorical gluing shall be called complex gluing, i.e. gluing complexions of different categories, hence 2-order gluing.
*3rd-order gluing*:
Polycontextural gluing shall be called second-order gluing, i.e. trans-gluing, hence 3-order gluing. The French may call this stuff trance-glu(e).
*4th-order gluing*:
Diamond gluing shall be called splitting-gluing, i.e splitting the glue of gluing the glue, hence 4-order gluing.

*Para-glue* is the parapluie of all umbrellas without being itself an umbrella. It guarantees a state of gluey gluishness.

# Theories of conceptual glue

## Set theory

Set theory is working with ordinary glue. One big universe of sets is enough to glue all the sets together. Who, who wants more gets punished by antinomies. Others will have to climb the ladders of Bertrand Russell's escape strategy. In ordinary mathematical life ordinary glue is enough, it is doing its job of gluing things together properly.

**Claude Shannon's glue**
**"**Irish glue has the reputation with some persons."

With the mathematical theory of communication, the communication model needs a common sign set as a cut of the sign repertoires of two communicants, sender and receiver or source and target. Such a cut is representing the common ground of communication. It functions as the necessary communicational pool of pre-giveness without it no communication can be realized.

Mostly, this obvious triviality isn't mentioned at all. Communicants are supposed to communicate directly and successful against the disturbance of the channel by noise.

As an example of an explicit semiotic model of communication, which is considering a common pool of knowledge the following diagram may visualize the role of the pool. In fact, it is a set theoretic *intersection* between the pool of the source and the pool of the target.

Hence, without intersection (overlapping), no communication. Intersections are easily done, without any trouble, with the help of Cantor's glue.

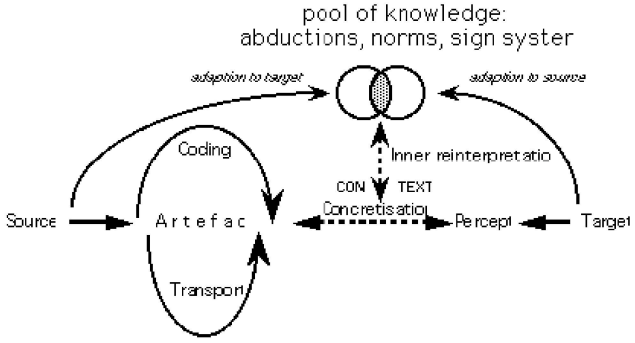



**Fig. 5. General model of communication**
"As the communication model is presented here (cf. Fig.5), it also incorporates modifications which do not stem from the Prague school. According to an idea, suggested both by Moles and Lotman, the

sender and receiver of any situation of communication start out with "codes" — or, as I would prefer to say, systems of interpretation —, which only partially *overlap*, struggling to homogenise the system of interpretation as the communication proceeds (cf. Sonesson 1995; 1997c).

The communicative act is said to be *sender-oriented*, to the extent that it is considered to be the task of the receiver to recover that part of the system of interpretation, which is not shared between the participants.

It will be *receiver-oriented*, to the extent that the task of recovering knowledge not held in common is assigned to the sender.
When sender and receiver fail to *negotiate* the parts of the interpretation system which they do not both possess, the resulting concretisation will be a *deformation*."

Göran Sonesson, The Limits of Nature and Culture in Cultural Semiotics
http://filserver.arthist.lu.se/kultsem/sonesson/CultSem2.html

## ■ Strategies to avoid glue: Hidden Glue

Strategies to avoid glue are well known.
One of them is best summarized for computing models and programming languages by the strategy
*"EverythingIsa: Everything is a EverythingIsa."*
This method of gluing things together without getting wet and glued or agglutinated is applied for cosmological, social and biological theories too. It is the strategie of avoiding glue with the help of a hidden ultra-super glue, sometimes properly called *Deus Absconditus*.
The Class of all classes.
The Category of all categories.
The Module of all modules.
The Macro of all macros.
The ETC of all etc.

The other strategy, not yet well known in scientific circles and programming labs is : *Barr the barr*. Or equivalent: *Don' t barr the Barr*.
Albeit an ancient strategy, it is used and becoming fashion only recently.
The main Barr barrer is the thinker Martin Heidegger with his barred non-term-terms Sein and Ereignis from his writings≠.

"Insofern kann ‚Ereignis', bezogen auf

diese Systeme, nur *gebarrt* geschrieben werden:  " (Peter Fuchs)

(FrameMaker offers the function "Strikethrough")

EverythingIsa: Everything is a EverythingIsa.
http://c2.com/cgi/wiki?EverythingIsa

Categories and Contextures
www.thinkartlab.com/pkl/lola/Categories-Contextures.pdf

Peter Fuchs: Ereignis, Welt und Weltereignis
http://www.fen.ch/texte/gast_fuchs_weltereignis.pdf

## Category theory

Category theory, which doesn't want to be involved with the internal's of sets, is interested more into the inter-relationships between so called objects. Such inter-relating morphisms are building a *society of objects*. What is the glue of this society of objects?The glue of this society is not Opium but *coincidence*. Coincidence relations as *matching* condition are gluing morphism together. Without such glue there is no commutativity for the composition of morphisms. Compositionality as such remains an open question.

Category theory as the general glue of mathematical studies.

In other words, the conditions of the composition of morphisms, i.e. the coincidence between codomain (target) and domain (source), or the matching conditions of mappings for the 'object-free" category are not themselves defined by categorical notions.

This sounds trivial, because the matching conditions are defined in a logical meta-language. But the interactivity between the categorical object-language and the defining meta- or proto-language isn't clear.

> *"For him [Jean-Yves Girard], category theory characterises objects in terms of their "social lives"".*
> José Luiz Fiadeiro, Categories for Software Engineering, p. 2

Combining: splitting/slicing
Where there is no glue there are bridges.
Combining logics

> "By '*bridge principles*' we mean, in a wide sense, any interactions (i.e., derivations) among distinct logic operators which are not instances of valid derivations in the individual logics being combined.
>
> "Therefore bridge principles are the result of reciprocal action or influence of the collective logics being combined, and not merely derived rules or theorems."
> http://www.cle.unicamp.br/cle30-ebl-slalm/TutorialEBL01.pdf
>
> *Glue logic*
> "Glue logic is a theory of 'semantic assembly', that is, the way in which information about the meaning that is provided by lexical items and grammatical constructions is put together to get a meaning for the whole utterance."
> http://www.als.asn.au/proceedings/als2003/andrews.pdf
>
> **Adhesive categories**
> Stephen Lack and Pawel Sobocinski: We introduce adhesive categories, which are categories with structure ensuring that pushouts along monomorphisms are well-behaved. Many types of graphical structures used in computer science are shown to be examples of adhesive categories. Double-pushout graph rewriting generalises well to rewriting on arbitrary adhesive categories.
>
> "This provides further evidence of how pushouts behave in adhesive categories as well as making more precise the intuition that the pushout operation "glues together" two structures along a common substructure. As a corollary, it follows that in an adhesive category the lattices of subobjects are distributive.
>
> "Definition 5.2 (**Gluing Conditions**). Given a production p as in (1), a *match* in C is a morphism f : L ⟶ C. A match f satisfies the *gluing conditions* with respect to p precisely when there exists an object E and morphisms g : K⟶ E and v : E ⟶ C such that
>
> $$\begin{array}{ccc} L & \overset{l}{\longleftarrow} & K \\ f\downarrow & & \downarrow g \\ C & \underset{v}{\longleftarrow} & E \end{array}$$
>
> is a pushout diagram."(p. 15/16)
> http://www.maths.usyd.edu.au/u/stevel/papers/adhesive.html
> http://www.brics.dk/RS/03/31/BRICS-RS-03-31.pdf

## Bi-category theory

From glu(e) to (co)span.
A span, even a co-span isn't yet a salto.

> Typically, in a category of systems, morphisms capture a "component-of" or "sub-system" relationship. As already motivated, in software intensive systems it does not make sense to talk about "component-of" relationships in an algebraic way." (CALCO'07, p.195)

Glue is a crucial term in the work of José Luiz Fiadeiro.
Also the term "glue" isn't honored in the index of his *"Categories and Communities"* eBook. The term "glue" nevertheless occurs 36 times at strategic positions.

IGLU, as a white box of gluish mediation

> *"The other structure that is important for interaction protocols is that of the glues; we assume that glues can themselves be organised in a category* ***IGLU*** *and that a functor* ***sign:IGLU->SIGN*** *returns, for every glue, the structure of interactions (signature) that are being coordinated by the protocol. As a consequence, a morphism σ:G1->G2 of glues captures the way G1 is a sub-protocol of G2, again up to a possible renaming of the interactions and corresponding parameters. That is, σ identifies the glue that, within G2, captures the way G1 coordinates the interactions sign(G1) as a part of sign(G2). In fact, because we need to be able to compose interaction protocols, we assume that* ***IGLU*** *is also a finitely co-complete category.* (J.L. Fiadeiro, Schmitt, p.200)

> *"That is, sources of morphisms in diagrams in* ***IGLU*** *are, essentially, signatures, which is why we decided to work with structured morphisms in interaction protocols. (ibd. 201)*

Nevertheless, things are highly intriguing:

> "More precisely, given a coordinated category **sign:IGLU→SIGN**, using **cospan( SIGN)** for interconnections is too poor because it does not support the definition of coordination mechanisms, and using **co-span(IGLU)** is too strong because the interfaces involve computational aspects. This is why we proposed to work over an algebraic structure co-span(sign) that is based instead on sign-structured morphisms." (p.14, CALCO'07)

There is a big and a small iglu included: **iglu:SIGN→IGLU.**

## Polycontextural logic

Ferdinand de Saussure: glue/clue

Mediation of different contextures is glue-less. Glue is clueless to mediation. Glue, as we know it from category theory is not a mechanism, it is a non-mechanism of suggestiveness. It suggests solutions where there are nothing more than desires. Glue turns out to be a universal blank, a fashionable legerdemain of domains and codomains.

Gotthard Gunther tried in his early philosophical attempts to get rid of the hallucinogenic, glutinous, adhesive sizziness of the ultimate clamminess of social-ontological considerations.

First, in the early 30s he discovered the conceptual mechanism of mediation in Hegel's Logic. Then he tried to glue together his discoveries with the then arising mathematical logic, especially the early work of Alfred Tarski.

After his emigration to the USA, he tried to work out the logical mechanism of mediation. First, as a multi-valued *place-value system* of logic culminating in his general logical theory of mediation (*Vermittlungstheorie*) of different trans-classic types of logics. Then as a morphogrammatically based quindecimal system of mediation.

There was still a lot of glue necessary to let the mechanism of mediation run. But because of its imminent processuality, mediation isn't to fix by any glue.

Only a brand new procedure of evaporating such mediating glue led to a more clamminess-free running of the mechanism. The sacrifice was enormous and radical: he had to eliminate any kind of conceptual and apparative lubricant of onto-logical heritage. This glue-free mechanism, called *morphogrammatics*, enabled a kind of a first run of clean and pure mediation of logical systems as a basic framework for cybernetic, cognitive and volitive, conceptual designs.

Where there are no objects and no inter-relating morphisms in the play there is also nothing which could be glued.

Such morphogrammatic mechanisms are based on the inscriptions of emptiness, called *kenograms*. The situation established is not specifically gluish, there is not much academic gossip possible about and of the ultimate but structured emptiness of the void; but the mechanism is working in its dry silence.

It may still be an open question if such sacrifices are strictly necessary to get rid of the self-fumigation of current glue-strategies in computer science not to mention the bulk of social theories in sociology and informatics.

## ■ Diamond theory

Agglutination, inversion, chiasm: “gl” and “lg”.

Complementarity of categories and saltatories is interplaying in a glue-free game of jumps. Categories might be glued. Saltatories are not gluing their gaps. Complementarity between categories and saltatories happens in a glue-free interplay of bridging salti.

In other words, how can we glue things together without getting hassled by the clamminess of our glue and still being able to enjoy the gluishness of its intoxication?

The answer to this paradox is given by the jump-operation of saltisitions.

Saltisitions and hetero-morphisms are characterized by antidromic orientations. Hence, it would be natural to think of them as products of inversion, i.e. as inverted morphisms. But that’s not a solution. The inversion of “glue” is “ugly”, and there is no doubt that glue is fundamentally ugly and a categorial member of ugliness.

A combination of the ag- “gl” and de-glutional “lg” to “gl-lg” is discovering a tiny *chiasm* in the very concept of the ugliness of agglutination (GLAS, Derrida). This phenomenon probably was the very reason that let to the misleading hope that the mechanism and strategy of *inversion* and *dislocation* of (semiotic) gluton will help to avoid the crash of the evaporating glue of togetherness.

Saltisitions are inscribing the conditions of the possibility of categorical compositions. Compositions in category theory are glued together by the matching conditions. Their clamminess might be avoided by a jump from category to diamond theory.

*First*,
the categorical gluing operation is mirrored in its complementary hetero-morphism. Hetero-morphisms are reflecting, complementarily, the compositions of categories by keeping their concept of compositionality while avoiding their clamminess.

*Second*,
by the complementarity of categories and saltatories the clamminess of the matching conditions for compositions gets its complementary counter-part in saltatories as the glue-less jumping operation between hetero-morphisms. Saltitions are freed of any resemblance to glueness. The glue has evaporated into the joy of jumps.

*Third*,
Diamond theory is thematizing the activity of the composition operator not as a morphogram but as a complementarity to the operator, implemented as a hetero-morphism.
Diamonds are thematizing the basic operation of category theory as such: the operation of composition. The thematization is modeled into the hetero-morphisms.
In a general setting of graphematic analysis of composition, the morphogrammatics of the operator "composition" has to be taken into account, too. That is, the neither-nor gesture of categorical object and morphism has a double face: *hetero-morphism* and *morphogram* of composition.
http://www.thinkartlab.com/CCR/2007/07/complementary-blog-diamond-strategies.html

*Forth*,
Composition-free interplay.
In a kenomic play (Fink, Derrida) there is no composition, neither any “gl” nor “lg” mispend.

# Diamond theory of interactivity

This part of the Short Study *“Category of Glue”* will be glued together as soon as I have found the “gl"/"lg"-free glue of ugliness and shall be published as part II of “Category of Glue".