

# Science Publishing:

## The Different Interests of *Record Keeping and Knowledge Transfer*

Jan Velterop – “Open Access-Open Data” – Köln – December 2010

*Publishing =  
knowledge transfer*

*Publishing  $\neq$   
knowledge transfer*

*Why this change?*



A new article in PubMed  
every 36 seconds

molecular Biology Laboratory in Heidelberg, Germany, and won Elsevier's Grand Challenge 2009 competition for new tools that improve the communication and use of scientific information.

Reflect automatically recognizes and highlights the names of genes, proteins and small molecules in the *Cell* articles. Users clicking on a highlighted term will see a pop-up box containing information related to that term, such as sequence data and molecular structures, along with links to the sources of the data. Reflect obtains this information from its dictionary of millions of proteins and small molecules. Such 'entity recognition' can be done fairly accurately by many mining tools today. But other tools take on the tougher challenge of recognizing relationships between the entities. Researchers from Leiden University and Erasmus University in Rotterdam, both in the Netherlands, have developed software called Peregrine, and used it to predict an undocumented interaction between two proteins:



# Current publishing : needle transport





*What does it all  
mean for publishing?*

*Why do scientists  
publish?*

# The record\*

“keeping the minutes of science”

1



\*picture inspired by Geoffrey Bilder of CrossRef

# The record\*

“keeping the minutes of science”

1



\*picture inspired by Geoffrey Bilder of CrossRef



# Credit in the ego-system; the *acknowledge economy*\*

2



\*'Acknowledge economy' coined by Geoffrey Bilder of CrossRef

# Credit in the ego-system; the acknowledge economy\*

2



\*'Acknowledge economy' coined by Geoffrey Bilder of CrossRef

$$1 + 2 =$$

the interface with  
officialdom



# Transfer of information and knowledge

3



3 =

the interface with science

*Are the requirements  
for all three the same?*



*Are the requirements  
for all three the same?*





*What we have may  
be good for the record  
and for credit...*

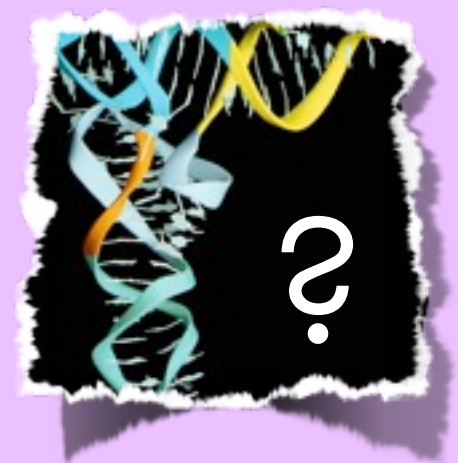




*What we have may  
be good for the record  
and for credit...*



*...but is it satisfactory  
for the transfer of  
knowledge?*



*There is just too  
much to read*

*Information consumes  
the attention of its  
recipients...*



*...hence a wealth of  
information creates a  
poverty of attention*

Herbert Simon



Datarrhoea ?

Publicatarrh ?





*Should we have to  
make choices ?*

*Can we, truly ?*



*How would we  
choose anyway?*







Shouldn't we take in  
**ALL** the knowledge  
in our area?

*As well as satisfy  
the academic desire to  
avoid reading ?*

*Create an overview  
first, perhaps?*







*And then home in on  
detail?*







*What does it all  
mean for publishing?*



In the interface with publishers



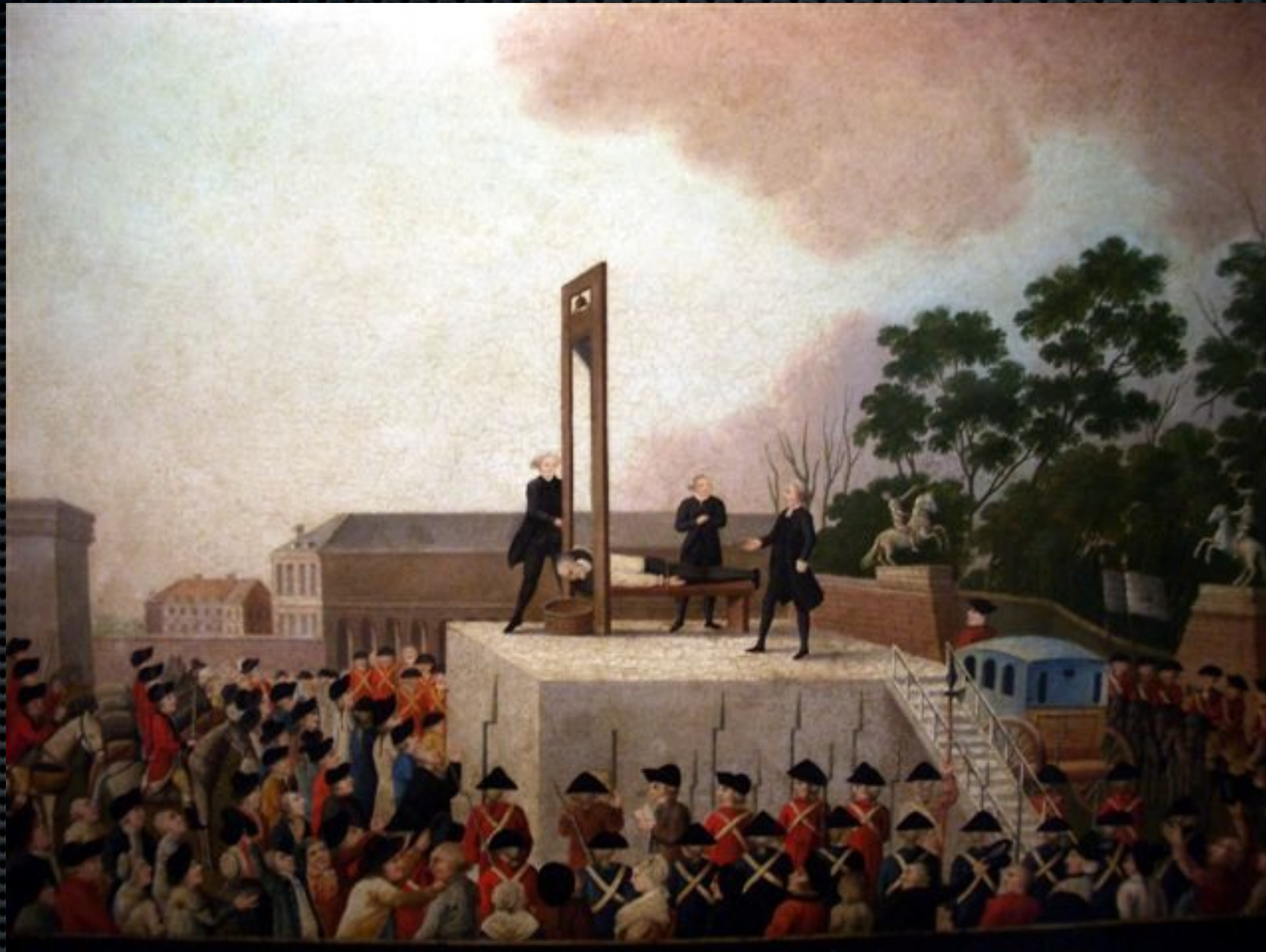
Content

is King





Or “was” perhaps?





*Well, it's still  
content that counts*



<protein kinase> <phosphorylates> <proteins>

<protein kinase>   <phosphorylates>   <proteins>

<*subject*>   <*predicate*>   <*object*>

<#26277419>

<#2121378>

<#13817745>

<protein kinase>

<phosphorylates>

<proteins>

<*subject*>

<*predicate*>

<*object*>

<#26277419>

<#2121378>

<#13817745>

<protein kinase>

<phosphorylates>

<proteins>

<*subject*>

<*predicate*>

<*object*>

*'Assertion' a.k.a. 'Triple'*



<#26277419>

<#2121378>

<#13817745>

<protein kinase> <phosphorylates> <proteins>

*Articles are full of these  
assertions / triples*

<#26277419>

<#2121378>

<#13817745>

<protein kinase> <phosphorylates> <proteins>

*Let's call them  
'Nanopublications'*

# Nanopublications: Assertions with Attitudes

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# Nanopublications: Assertions with Attributes

*Examples of attributes:*

`assertedBy` - states which entity asserted (i.e. created) the statement

`curatedBy` - states that a specified entity has curated the statement

`isPeerReviewed` - states that this statement has been peer reviewed

`isPublished` - states where this statement was first published

`isEvidencedBy` - states that another statement, Y, should be considered evidence for this statement X

`createdOn` - states the date/time that the statement was created

`hasAuthor` - states who claims authorship of the statement

`isApprovedBy` - states who approves of the statement

`isDeprecatedBy` - states that the statement is no longer in use by the entity in question

*Nanopublications  
are assertions*

*Nanopublications  
are also  
references*

# Nanopublications: Assertions with Attributes

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*i.e.*

*they can be cited:*

*good for impact*

*& acknowledgement*



*And...aren't  
references open and  
free?*



```
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<cwa:provenance rdf:resource="http://article.conceptwiki.org/index.php/#121646370"/>
<cwa:timestamp>1240641052059</cwa:timestamp>
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<cwa:annotation rdf:resource="http://www.virusdb.org/viruses/av/Heliothis_virescens_insect">
</rdf:Description>
```



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nceptwiki.org/index.php/#43065817"/>  
b.org/viruses/av/Heliothis_virescens_insect">
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<cwa:annotation rdf resource="http://www.virusdb.org/viruses/av/Heliothis_virescens_insect">  
</rdf:Description>
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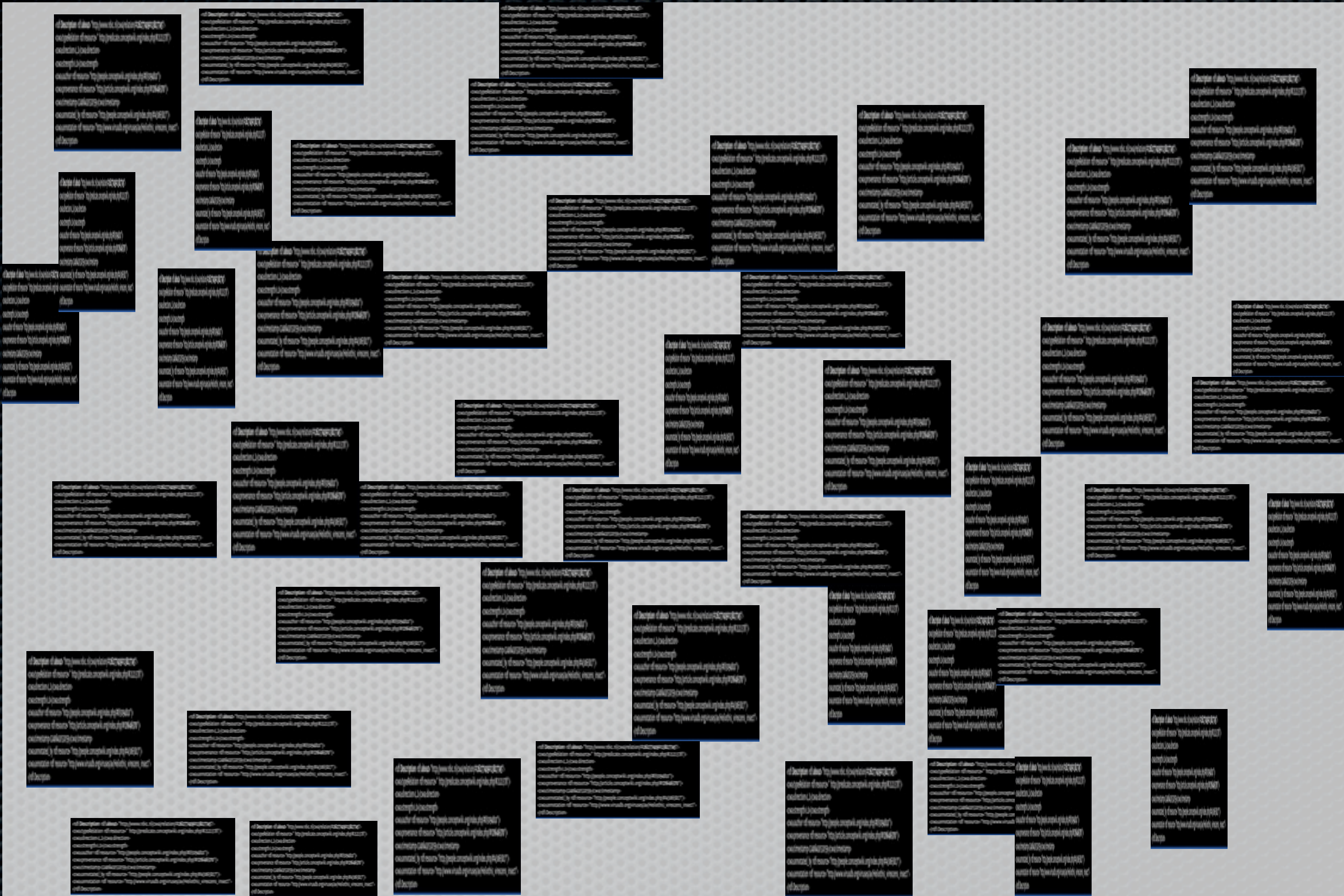
```
g/index.php/#85094810"/>  
ki.org/index.php/#121646370"/>
```

```
wiki.org/index.php/#43065817"/>  
viruses/av/Heliothis_virescens_insect"
```

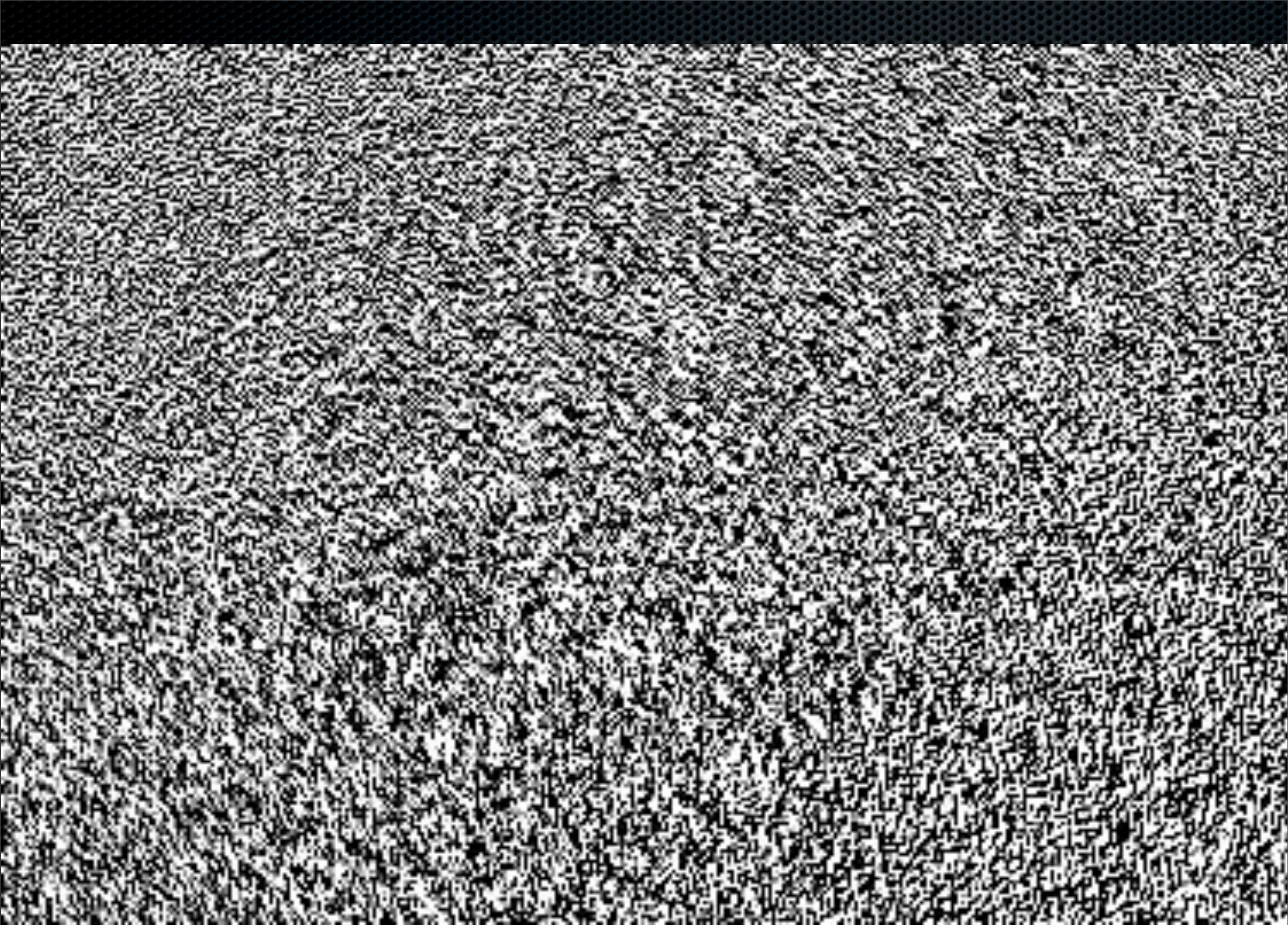














# The whole picture

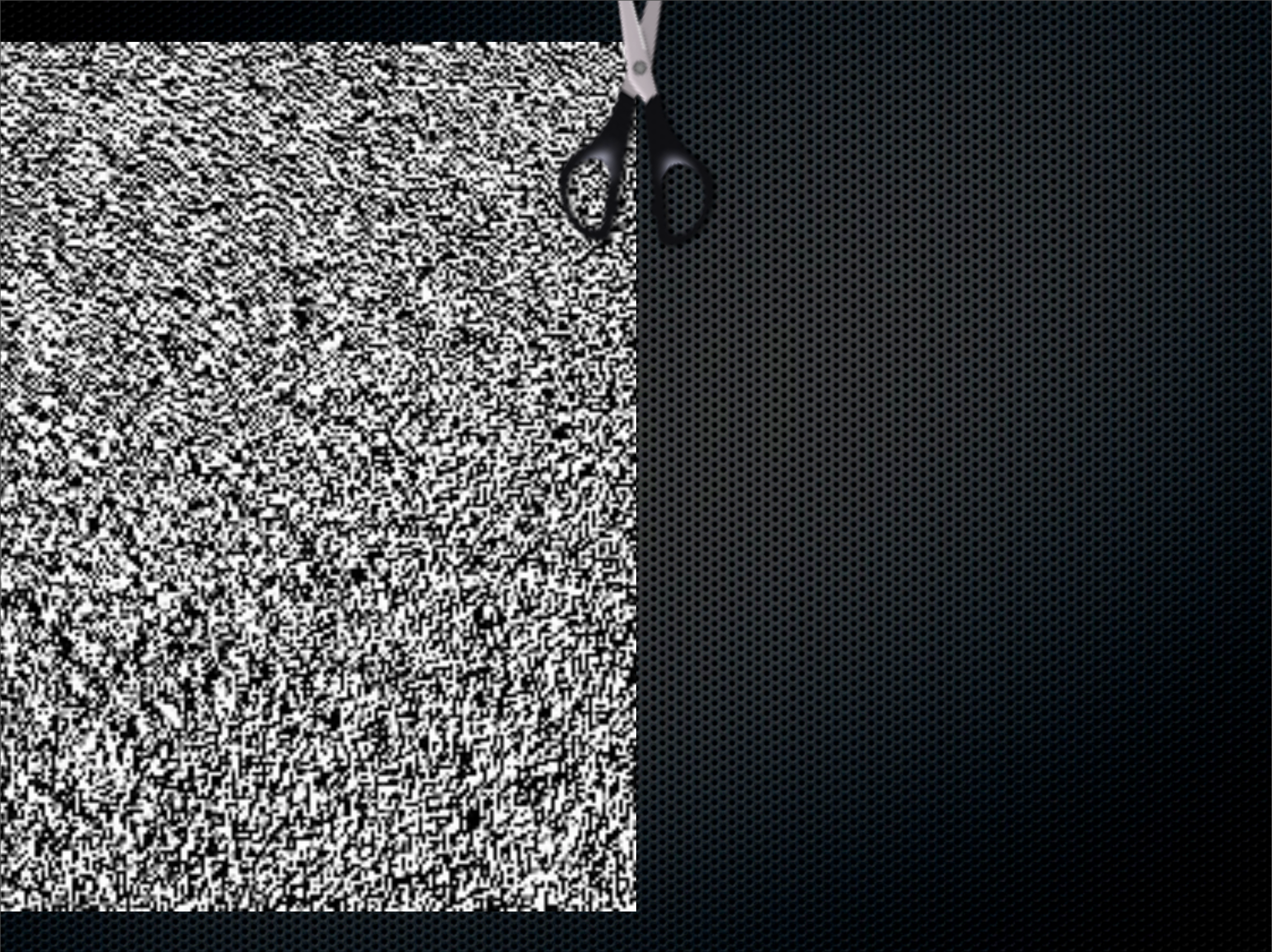




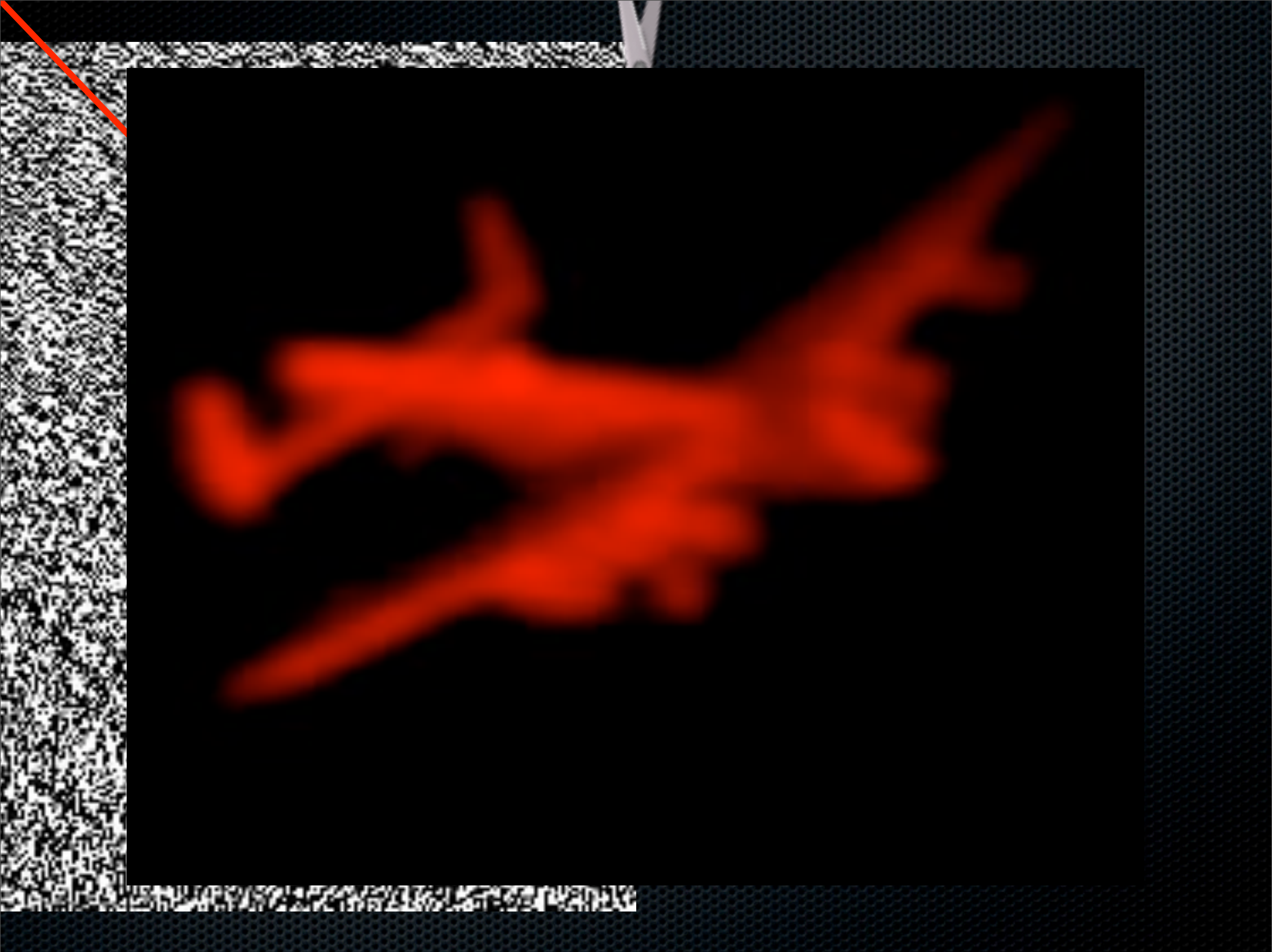


Even if you don't have all the  
detail















*detail*





nanopublications (i.e. references)  
can also be used to reason

nanopublications (i.e. references)

can also be used to reason

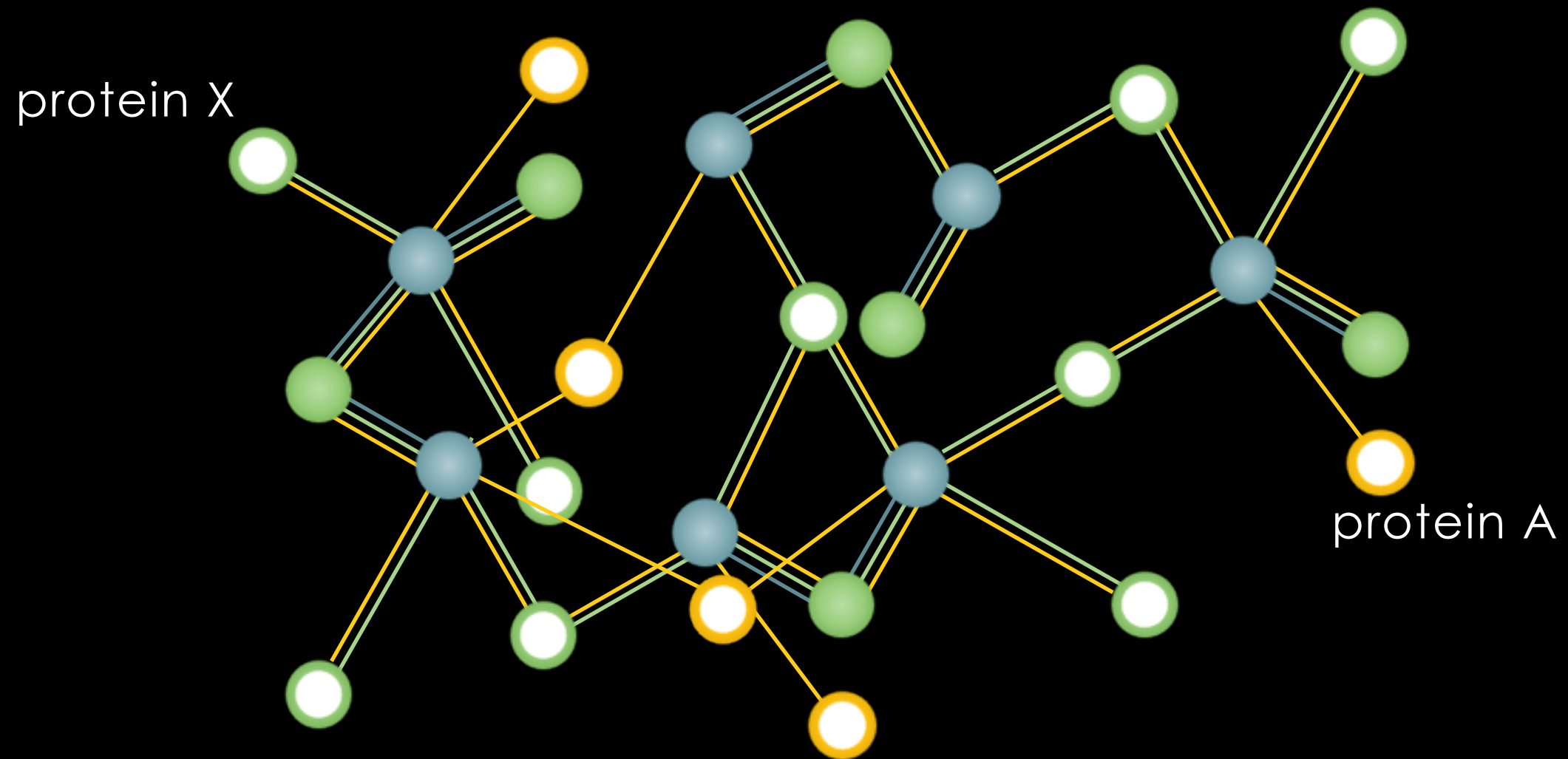
*Publications' yield 'data'*



nanopublications (i.e. references)  
can also be used to reason

nanopublications (i.e. references)

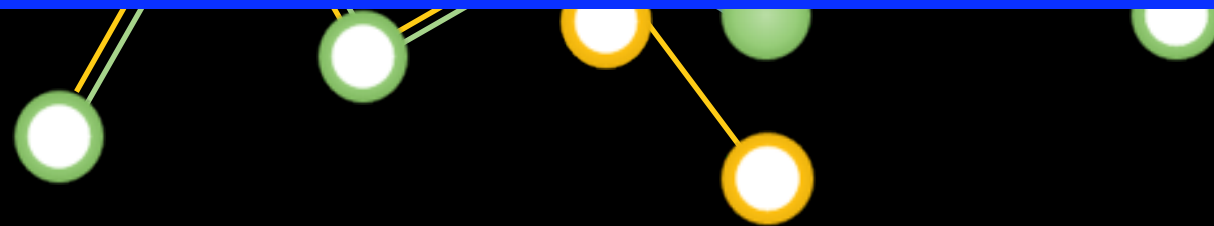
can **also** be used to reason





nanopublications (i.e. references)  
can **also** be used to reason

*Exposing the  
'unknown knowns'*



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**Abstract** [Top](#)

We have developed a method that predicts Protein-Protein Interactions (PPIs) based on the similarity of the context in which proteins appear in literature. This method outperforms previously developed PPI prediction algorithms that rely on the conjunction of two protein names in MEDLINE abstracts. We show

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