

Communicating science

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The academic paper

The academic paper is the primary method to share results and knowledge about science



In **2010**...

1.5 million
peer-reviewed papers
23,750
journals



It is estimated around
40%
of papers get
0
citations



Search: Titles are key



Favorites



PLOS Collections: Article collections published by the P...

Research Articles [Top](#)

[Spatial Epigenetic Control of Mono- and Bistable Gene Expression](#)

János Z. Kelemen, Prasuna Ratna, Simone Scherrer, Attila Becskei

PLoS Biology:

Published 16 Mar 2010 | [info:doi/10.1371/journal.pbio.1000332](https://doi.org/10.1371/journal.pbio.1000332)

Related PLoS Articles

[Location Matters: How Spatial Positioning of Regulatory Proteins Produces Divergent Outcomes](#)

[Widespread Gene Conversion in Centromere Cores](#)

Jinghua Shi, Sarah E. Wolf, John M. Burke, Gernot G. Presting, Jeffrey Ross-Ibarra, R. Kelly Dawe

PLoS Biology:

Published 09 Mar 2010 | [info:doi/10.1371/journal.pbio.1000327](https://doi.org/10.1371/journal.pbio.1000327)

Related PLoS Articles

[Centromeres Convert but Don't Cross](#)

[Expression in Aneuploid *Drosophila* S2 Cells](#)

Yu Zhang, John H. Malone, Sara K. Powell, Vipul Periwal, Eric Spana, David M. MacAlpine, Brian Oliver

PLoS Biology:

Published 23 Feb 2010 | [info:doi/10.1371/journal.pbio.1000320](https://doi.org/10.1371/journal.pbio.1000320)

Related PLoS Articles

[Genomic Responses to Abnormal Gene Dosage: The X Chromosome Improved on a Common Strategy](#)

[2-D Structure of the A Region of Xist RNA and Its Implication for PRC2 Association](#)

Sylvain Maenner, Magali Bland, Laetitia Fouillen, Anne Savoye, Virginie Marchand, Agnès Dubois, Sarah Sanglier-Cianfèrani, Alain Van Dorsselaer, Philippe Clerc, Philip Avner, Athanasios Vavivakis, Christiane Branlant

PLoS Biology:

Published 05 Jan 2010 | [info:doi/10.1371/journal.pbio.1000276](https://doi.org/10.1371/journal.pbio.1000276)

[Poised Transcription Factories Prime Silent uPA Gene Prior to Activation](#)

Carmelo Ferrai, Sheila Q. Xie, Paolo Luraghi, Davide Munari, Francisco Ramirez, Miguel R. Branco, Ana Pombo, Massimo P. Crippa

Expanding your audience

- Seminars
- University newsletter
- Conference poster
- Blog post
- Social media
- Press release
- Newspaper story or feature
- Funding body
- Politicians
- Beamtime proposals
- University Dean – 30 seconds
- Members of the public
- Schools









Who is your audience?

- Name, age, gender, marital status
- Occupation
- Favourite music
- What level of education do they have?
- How well do they know your market/sector?
- How much time and attention do they have?

- **What do you want them to do?**
- **What do they want?**



Exercise: What are you thinking?

"Ordinary light bulb with standard base"

Is your light bulb:

- 110V or 220V?
- Tungsten? Fluorescent?
- Coloured? Frosted?
- Bright? Dim?
- Working? Not working?
- Smashed?
- Bayonet or screw-in?



Exercise: What are you thinking?

Don't take anything for granted

Anticipate the questions people may have

What is your audience thinking?



Where are you? Where is your audience?



Expanding your audience

To get your science more widely known, **self-promotion** is key.

- Professional and trade magazines
- General interest magazines
- University websites
- Blogs
- Newspapers
- General interest magazines
- Radio
- Podcasts

... are always looking for interesting stories



Structure of a science paper

Title

Authors/Institutes

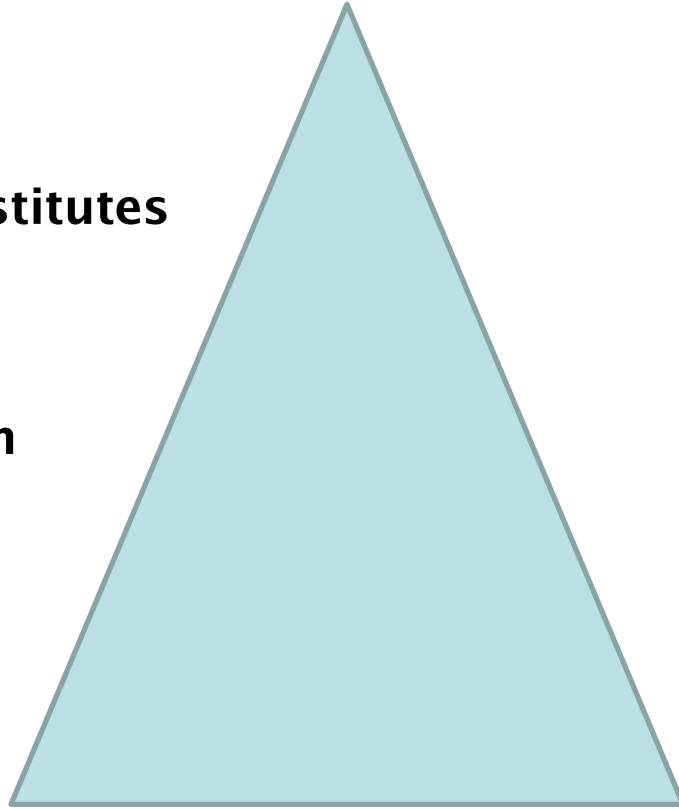
Abstract

Introduction

Results

Discussion

Conclusion



**Increasing
information
relevance**



Structure of a news story

Title

Standfirst

Byline

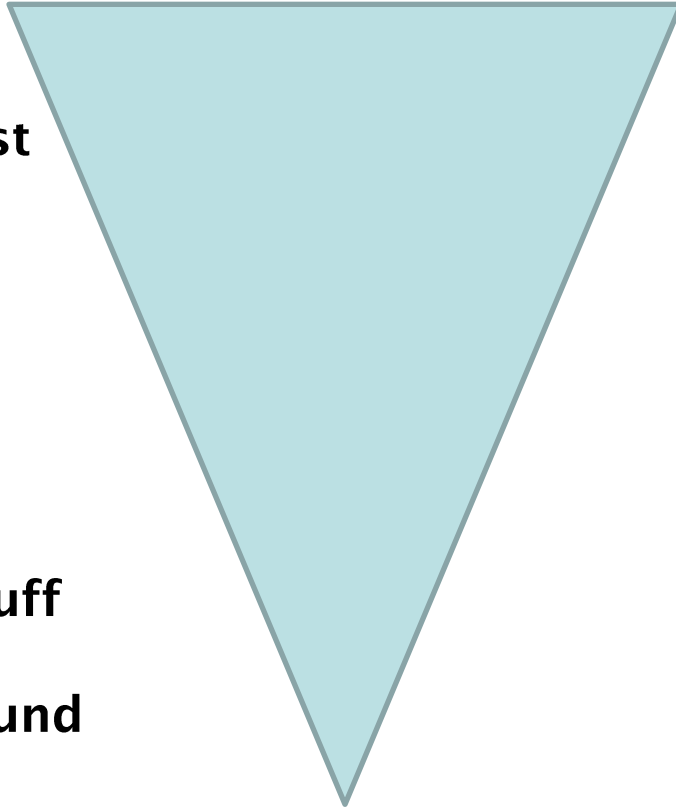
Facts

Facts

Facts

Other stuff

Background
to story



Most important

**Decreasing
information
relevance**

Least important



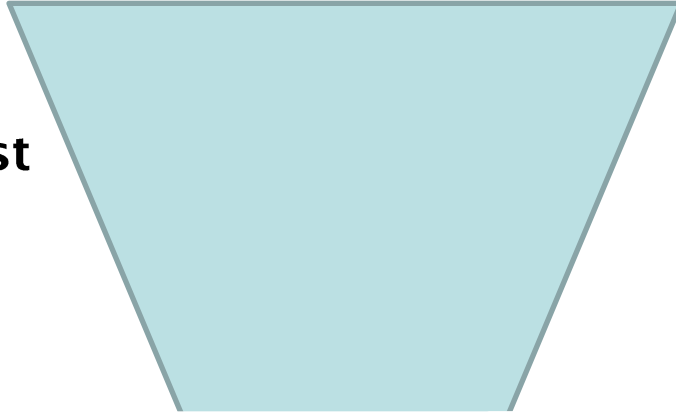
Structure of a news story

Title

Standfirst

Byline

Facts



Most important
information

**Decreasing
relevance**

Even if the story is cut to save space, you still get all the information!



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Even

Exercise: Inverted pyramid

1. Mr Harvey did not say which drug was suspected of causing his death. An autopsy is scheduled to take place on Thursday.
2. Ramone, whose real name was Douglas Glenn Colvin, was found dead on his couch by his wife when she returned home on Wednesday evening.
3. Punk pioneer Dee Dee Ramone, a founder member of the Ramones, has been found dead at his home in Hollywood aged 50.
4. "We are handling it as a possible accidental overdose," coroner's office operations chief Craig Harvey said.
5. The Los Angeles coroner's office said drug paraphernalia, including a single syringe had been found in his home.

1 - 2 - 3 - 4 - 5



Exercise: Inverted pyramid

Punk pioneer Dee Dee Ramone, a founder member of the Ramones, has been found dead at his home in Hollywood aged 50.

Ramone, whose real name was Douglas Glenn Colvin, was found dead on his couch by his wife when she returned home on Wednesday evening.

The Los Angeles coroner's office said drug paraphernalia, including a single syringe had been found in his home.

"We are handling it as a possible accidental overdose," coroner's office operations chief Craig Harvey said.

Mr Harvey did not say which drug was suspected of causing his death. An autopsy is scheduled to take place on Thursday.

3 - 2 - 5 - 4 - 1



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DAILY EXPRESS

THE WORLD'S GREATEST NEWSPAPER

WEDNESDAY



PRICE 35p

WEDNESDAY 22.01.11 4p

How the world fell for Adele



WOMAN OF THE YEAR PAGES 24 & 25

Scandal as workshy MPs get 58 days off in just five months

SEE PAGE 4

TSUNAMI NUCLEAR FALLOUT HITS UK

NUCLEAR fallout from Japan has been detected in Britain sparking fears the whole country could have been exposed to radiation.

Radioactive iodine was found in air samples taken in Oxfordshire, Gloucestershire and Devon.

Officials advised the general public

to shelter now

“radioactive iodine” has been traced from the Fukushima plant and another power plant. It can cause cancer, which was linked with the multiple cancer deaths and cancers in people living nearby.

The revelation came as Japanese prime minister Naoto Kan said the country was in a race to prevent such an

event happening again in Britain.

He described the quake, tsunami and nuclear accident as “the biggest disaster the world has ever seen.”

“The government has taken enough levels of precaution to deal with the situation,” he said. “We will continue to take the necessary steps to ensure the safety of the public.”

Meet the new Miss Marple...



GEMMA ARTERTON Actress Gemma Arterton is 40

But angry fans say she is far too glamorous



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El domingo 13 de septiembre prepárate para recibir una gran noticia



EL PAÍS

Napoleón descubrió América

CUENTA OPEN PLUS SEGURIDAD
Solo para nuevos clientes

3,10% TAE*

Hasta el 31/12/2009

2,06% nominal anual. Liquidación mensual de intereses. No admite domiciliaciones.

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Viernes, 4 de septiembre de 2009 - 07:24 h

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Los estadounidenses con familiares en Cuba podrán visitarla siempre

DAVID ALANDETE | Washington - 31 comentarios

Estados Unidos permite que los ciudadanos con familiares en la isla les visiten tantas veces como quieran todos los años.-El Tesoro levanta las restricciones sobre el envío de remesas

Corea del Norte eleva el desafío al anunciar que enriquece uranio

El régimen de Pyongyang ya controla la tecnología para fabricar bombas con plutonio, como quedó



Ahmadineyad refuerza su poder

El mandatario iraní logra el apoyo del



Messi y Tévez, delanteros ante Brasil

"Saldremos a atacar", asegura el seleccionador argentino, cuyo equipo se lo juega todo en el clásico suramericano

- Kaká: "Me quitaría el sueño estar como Argentina"
- Crisis de talento en Argentina, por JOSÉ PEKERMÁN

Deux Français sur trois opposés à la taxe carbone

4 réactions



INFOS ILE-DE-FRANCE ET OISE

- Le MIN de Rungis parie sur le rail (94)
- 1 AN Polémique sur un reportage à Sarcelles Les anti-F 1 reçus par le préfet de région Des défibrillateurs dans les rues de Sannois (95)
- Les voisins solidaires... même pour la grippe A (75)
- L'Unicef recherche des bénévoles (77)
- Perturbations sur la ligne à Vigneux (91)
- Toujours plus de grosses fortunes (91)
- Le bel été du tourisme (93)
- 450 millions d'euros pour le campus Condorcet (93)
- Conseils aux futurs entrepreneurs (78)

VOTRE VILLE

QUIZ PSG

SvD

"Bäst i klassen"
Internet world
Topp 100



MARIANNE NILSSON
Ska man plocka alltihop?
BLOGG | Svampbloggen

Vädret just nu

Stockholm 15°

> Välj annan ort
> Vädret i Sverige

Sök på SvD.se:

Sök

+ Visa fler sökalternativ

Startsidan Näringsliv Kultur & Nöje Sport **Stockholm** Opinion Blogg Resor Motor Webb-tv Mat & Vin Quiz Bostad SvD A-Ö

Ilyheter Stockholmskartan Stockholmsvädret Trafikkartan Krogguiden Stockholmguiden Sport i Stockholm

Nyhetsdygnet

Du är här: SvD.se > Stockholm > Ilyheter >



FOTO: SCANPIX ARKIV

Ja till Förbifart Stockholm

> Väntas kosta 27,5 miljarder kronor. Regeringen säger i dag ja till den omstridda trafikleden.

> OPINION **Oppositionslandstingsråd Lars Dahlberg**. Motståndet mot förbifarten är kontraproduktivt.

Behövs Förbifart Stockholm?



Du använder en föråldrad version av Internet Explorer

För att få bättre och säkrare upplevelse av webben rekommenderar vi att du laddar hem en **nyare version av Internet Explorer** alternativt någon av webbläsarna **Firefox**, **Safari**, **Opera** eller **Google Chrome**.

Om du sitter vid en jobbdator bör du kontakta din IT-ansvarige.

Senaste nytt

Mest läst

Populära klipp

- 21:14 Bilbrand i Hagsätra
- 20:23 Två skadade i mc-krock
- 18:58 Äldre kvinna räddad från balkong
- 16:54 Häst gick ner sig i gytta
- 15:58 Trapphus rökfyllt på Kungsholmen

+ Visa fler

> Se hela nyhetsdygnet

ANNONS



Health

Oily fish and nuts 'cut chance of food allergies'

Mothers-to-be can reduce the chances of their babies developing food allergies by eating a diet rich in oily fish and nuts, new research indicates.



Early exposure to omega-3 fatty acids - found in food like salmon and walnuts - makes it less likely babies will develop food allergies, believe researchers. Photo: MIKKEL VANG



By Stephen Adams, Medical Correspondent

6:30AM BST 09 Sep 2011

10 Comments

Academics have discovered that omega-3 fatty acids - found in fish like salmon, mackerel and tuna, as well as walnuts, pumpkin seeds and linseeds - prompt the gut to develop in a way that boosts the immune system.

Headline: Only fish and nuts 'cut chance of food allergies'

Standfirst: Mothers-to-be can reduce the chances of their babies developing food allergies by eating a diet rich in oily fish and nuts

Share:

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Share 5

0

Health
News » UK News »
Children's Health »
Health News »
Stephen Adams »



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Unit of meaning

The **combination of headline and standfirst** is the **most important part of story**

They are written together to work as **a self-contained unit of meaning**

Your reader might choose to continue reading....



Health

Oily fish and nuts 'cut chance of food allergies'

Mothers-to-be can reduce the chances of their babies developing food allergies by eating a diet rich in oily fish and nuts, new research indicates.



Early exposure to omega-3 fatty acids - found in food like salmon and walnuts - makes it less likely babies will develop food allergies, believe researchers *Photo: MIKKEL VANG*

Share:

Recommend 16

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Health

- News » UK News »
- Children's Health »
- Health News »
- Stephen Adams »

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Telegraph and BUPA
Care Homes seminar
Register today



Picture captions are also a single unit of meaning telling the whole story

Good headlines / titles are:

- **findable** – using **keywords** and **plain language**
- effective as **links**
- **supported by standfirsts** that make good snippets
- **descriptive**, not clever (no jokes!)
- **front-loaded** for user interest
- **instantly understandable**
- readable in a **list**



Exercise: Headline and standfirst

Write a headline and standfirst for your research:

- Headline (10 words maximum)
- Standfirst (25 words maximum)



How people read...

- **scan-read**
- look for **information cues**
- focus on **tasks**
- **impatient**
- move **forwards** – and keep moving
- are **cautious**, then conservative
- **create their own path**



How people read...

“We act as though people are going to pore over each page...

...the reality is much closer to a *billboard going by at 60 miles an hour...*”

Steve Krug, *Don't make Me think*



On writing

“I didn't have time to write a short letter, so I wrote a long one instead.”

- Mark Twain



George Orwell – 6 rules of writing

- Never use a metaphor, simile, or other figure of speech that you are used to seeing in print.
- Never use a long word where a short one will do.
- If it is possible to cut a word out, always cut it out.
- Never use the passive voice when you can use the active
- Never use a foreign phrase, a scientific word, or a jargon word if you can think of an everyday equivalent.
- Break any of these rules sooner than say anything outright barbarous!



Use fewer words

- Prior to
 - At this point in time
 - The reason for this is because
 - Due to the fact that
 - It is important to bear in mind that
 - A pair of twins
 - Orange in colour
 - Surrounded on all sides
 - Close proximity
- before
 - now
 - The reason is
 - because
 - Note that
 - Twins
 - Orange
 - Surrounded
 - Near



Use short words

Latin	Anglo Saxon
Residence	House
Cogitate	Think
Assists	Helps
Sufficient	Enough
Prior to	Before
Relate	Tell
Perplexed	Worried
Converse	Talk
Perambulate	Walk
Exterminate	Kill

Notice Latin words are longer and more abstract than their Anglo-Saxon alternatives?



Cut copy in half

- Be concise *and* precise
- Don't hack at the expense of sense
- Lose the flowery stuff
- Murder your darlings
- Keep sentences brief and clear
- Single idea per paragraph
- Write in the active voice, not the passive voice
- Punctuate lightly



Lose the flowery stuff

“Recently xxxx has generated much attention due to its....”

“xxx has be shown to have amazing and mind-boggling deviations from currently accepted theory of...”



Murder your darlings

Whenever you feel an impulse to perpetrate a piece of exceptionally fine writing, obey it – whole-heartedly – and then delete it before sending your manuscripts to press. Murder your darlings.

- Sir Arthur Quiller-Couch

Parts of your writing that you are particularly proud of are probably self-indulgent and will stand out. Ask someone to **read your writing objectively and edit it** or give feedback. Your writing will be much, much, much better following critical review.

If I come across anything in my work that smacks of ‘good writing,’ I immediately strike it out.

- Elmore Leonard



Passive voice

Passive voice

A priceless Rembrandt painting *was stolen* from the Metropolitan Museum of Art by three men posing as janitors.

(The painting is more important than the men in this sentence)

Active voice

Three men stole a priceless Rembrandt painting from the Metropolitan Museum of Art.

If you don't know what caused something, you **have to use** the passive voice:

The cargo *was damaged* during the trans-Atlantic flight.



Passive voice

"In the beginning the Universe *was created*. This has made a lot of people very angry and *has been widely regarded* as a bad move."

- Douglas Adams



Exercise: Cutting copy

Room Bookings

The CCPR has long provided a cost effective service for members by the provision of meeting facilities at its offices. We have recently extended and upgraded the facilities. We have two refurbished rooms available. The air conditioned Howell and Colson Rooms boast prices which are difficult to better in Central London.

These rooms are available to CCPR members and non members and can be utilised all week, including evenings and weekends. We are located in the heart of the City of , close to and St James's Park tube. For more information, call 020 7123 4567.

<93 words>



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Exercise: Cutting copy

Hire a room in central London

We have two air-conditioned **rooms available for hire in Westminster**, near Victoria and St James's Park tubes.

Rooms are available to all, **daytime, evenings and weekends**. Recently upgraded, they offer great **value for money** in a prime location.

For more information, call 020 7123 4567.

<49 words>



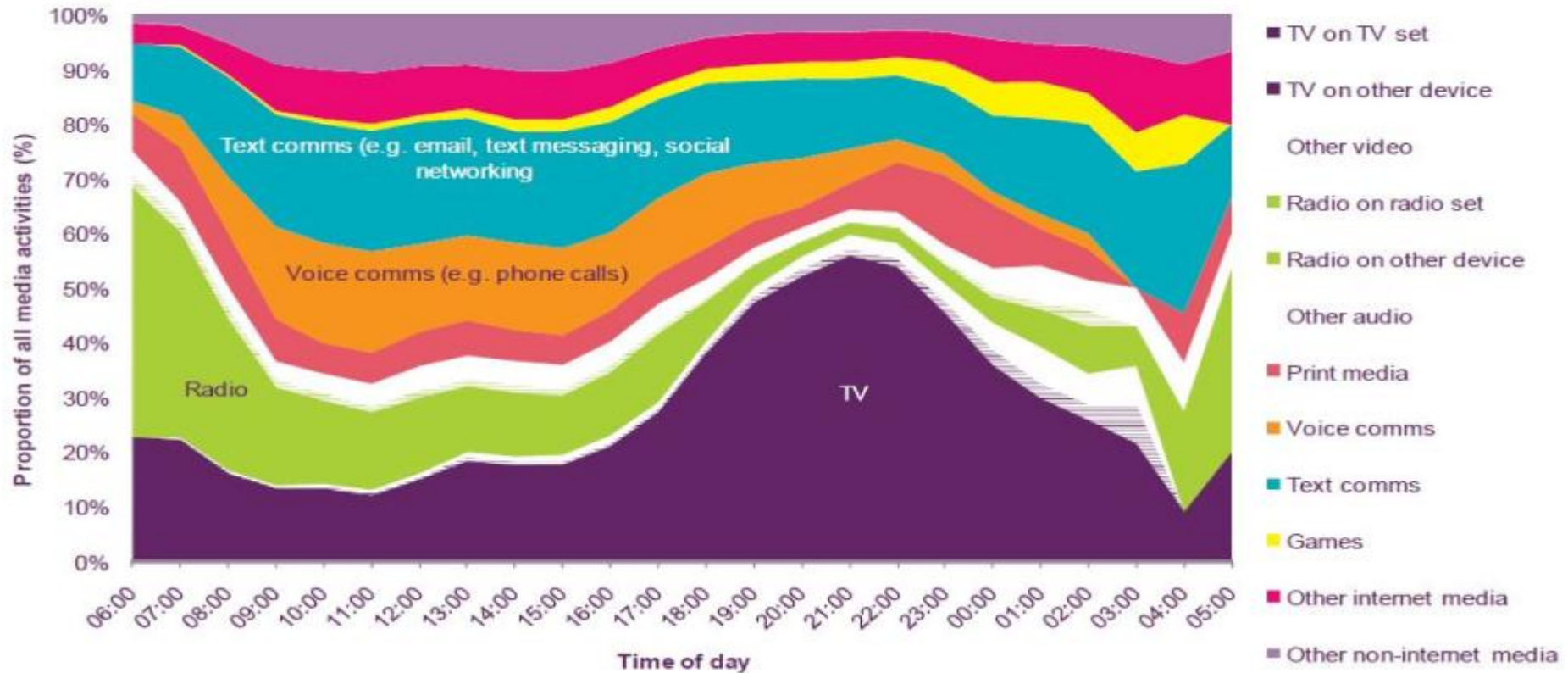
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UK media consumption habits

Ofcom 7th annual communications market report August 2010

Figure 1.14 Proportion of all media activity throughout the day



A (somewhat incomplete) timeline of social media

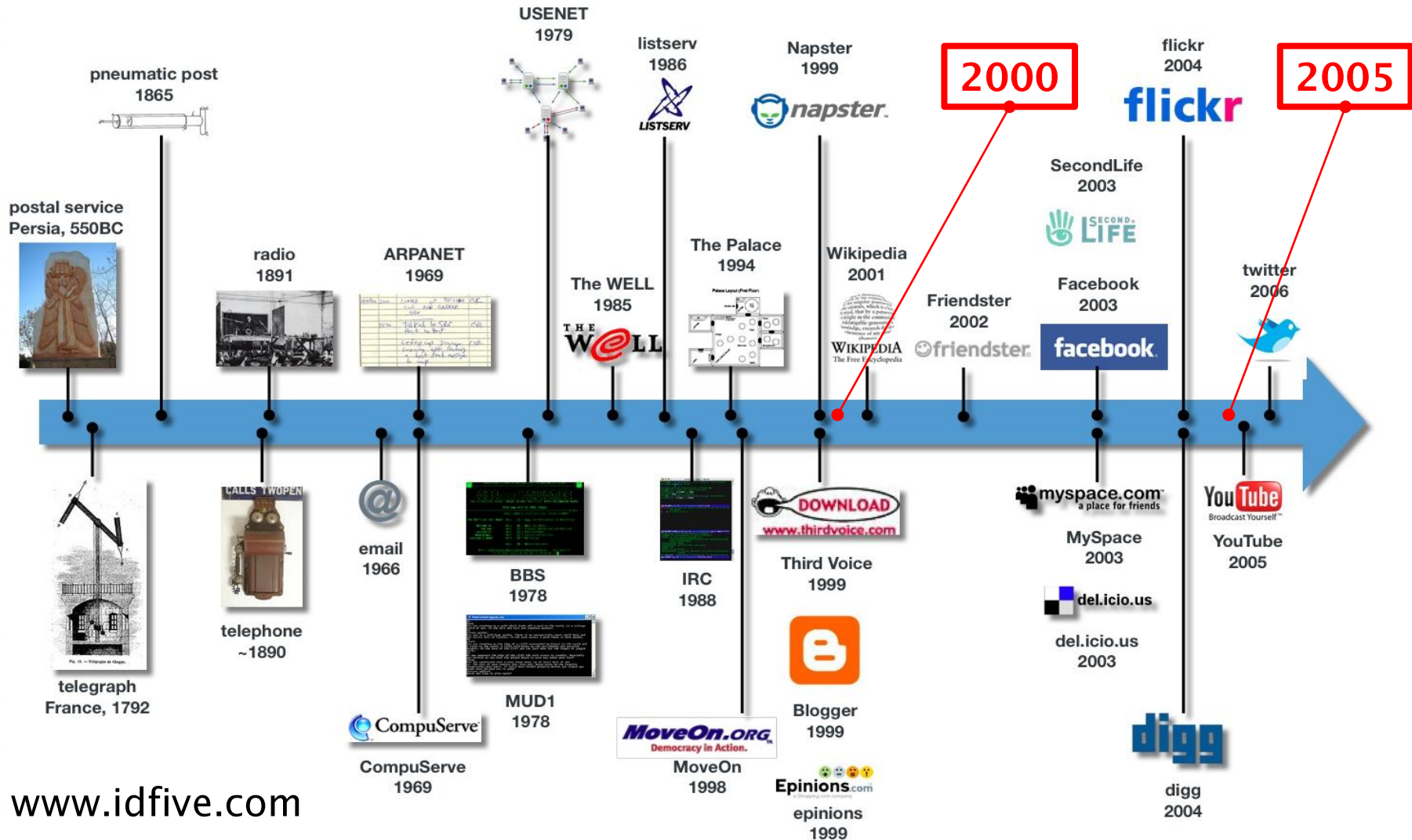
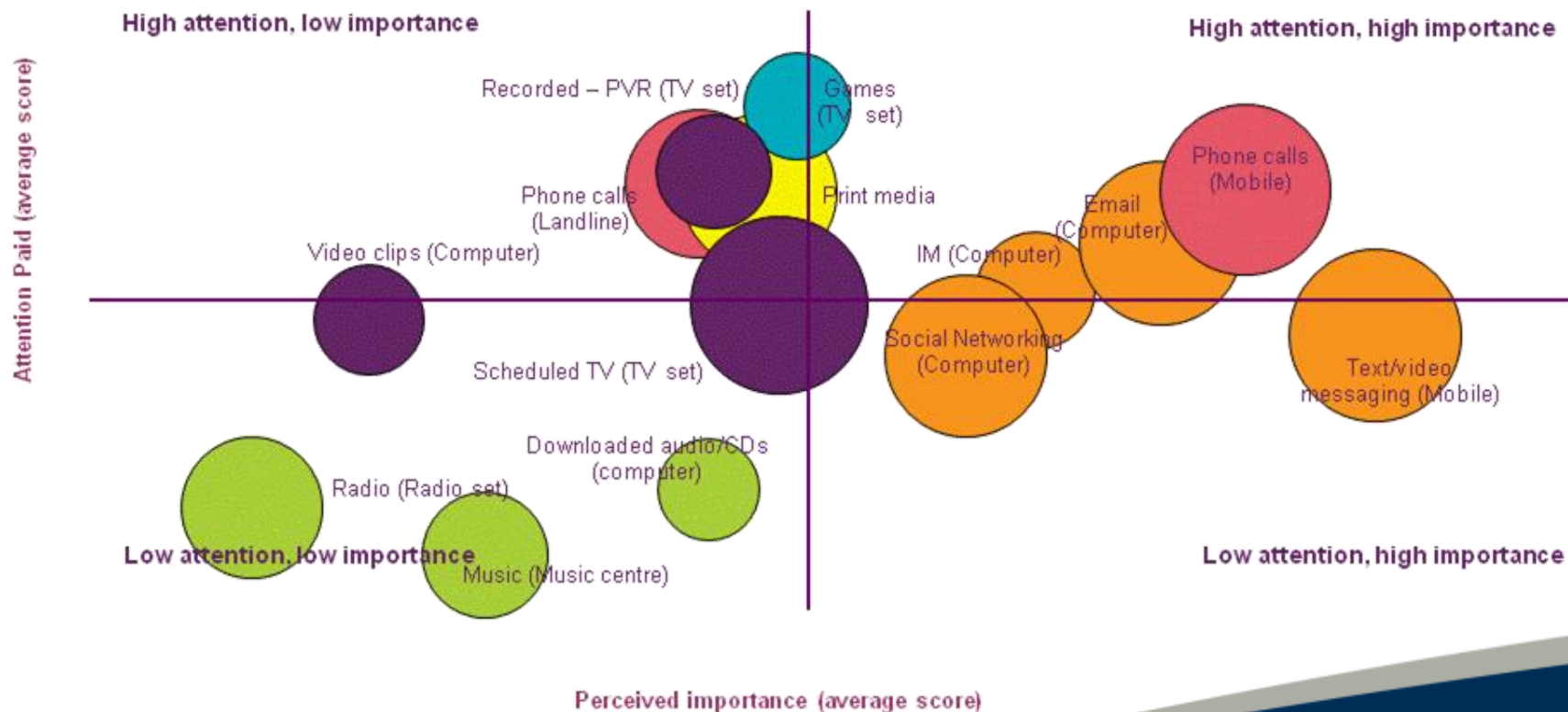


Figure 1.38

Importance and attention of activities for adults 16-24 – based on mean scores



Why use social networking?

**clearly communicate your
research to people beyond
your specialist area**



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Why use social networking?

**blends science into the mix
of everyday culture**

**shares knowledge beyond
the paywalls of journals
and newspapers**



Why use social networking?

**rapid alerting for your
networks – saving them
time**

**make use of the things that
fall in the cracks between
publications**



Why use social networking?

**shows you to be
active and vibrant**

**share context and
interpretation**



Why use social networking?

**explain the process and
business of doing science**

**a powerful way to reinforce
real world activity
continuing the engagement
after events**





Making sense of it all: what to use



+ mobile apps to update on the move



Neutron

From Wikipedia, the free encyclopedia

This article is about the subatomic particle. For other uses, see [Neutron \(disambiguation\)](#).

The **neutron** is a subatomic hadron particle which has the symbol n or n^0 , no net electric charge and a mass slightly larger than that of a proton. With the exception of hydrogen, nuclei of atoms consist of protons and neutrons, which are therefore collectively referred to as nucleons. The number of protons in a nucleus is the atomic number and defines the type of element the atom forms. The number of neutrons is the neutron number and determines the isotope of an element. For example, the abundant carbon-12 isotope has 6 protons and 6 neutrons, while the very rare radioactive carbon-14 isotope has 6 protons and 8 neutrons.

While bound neutrons in stable nuclei are stable, free neutrons are unstable; they undergo beta decay with a mean lifetime of just under 15 minutes (881.5 ± 1.5 s).^[a] Free neutrons are produced in nuclear fission and fusion. Dedicated neutron sources like research reactors and spallation sources produce free neutrons for use in irradiation and in neutron scattering experiments. Even though it is not a chemical element, the free neutron is sometimes included in tables of nuclides.^[a] It is then considered to have an atomic number of zero and a mass number of one, and is sometimes referred to as neutronium.

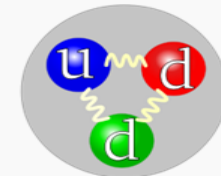
^[citation needed]

The neutron has been the key to nuclear power production. After the neutron was discovered in 1932, it was realized in 1933 that it might mediate a nuclear chain reaction. In the 1930s, neutrons were used to produce many different types of nuclear transmutations. When nuclear fission was discovered in 1938, it was soon realized that this might be the mechanism to produce the neutrons for the chain reaction, if the process also produced neutrons, and this was proven in 1939, making the path to nuclear power production evident. These events and findings led directly to the first man-made nuclear chain reaction which was self-sustaining (Chicago Pile-1, 1942) and to the first nuclear weapons (1945).

Contents [hide]

- Discovery
- Intrinsic properties
 - Stability and beta decay
 - Electric dipole moment
 - Magnetic moment
 - Anti-neutron
 - Structure and geometry of charge distribution within the neutron
- Neutron compounds
 - Dineutrons and tetraneutrons
 - Neutronium and neutron stars
- Detection
 - Neutron detection by neutron capture
 - Neutron detection by elastic scattering
- Uses

Neutron



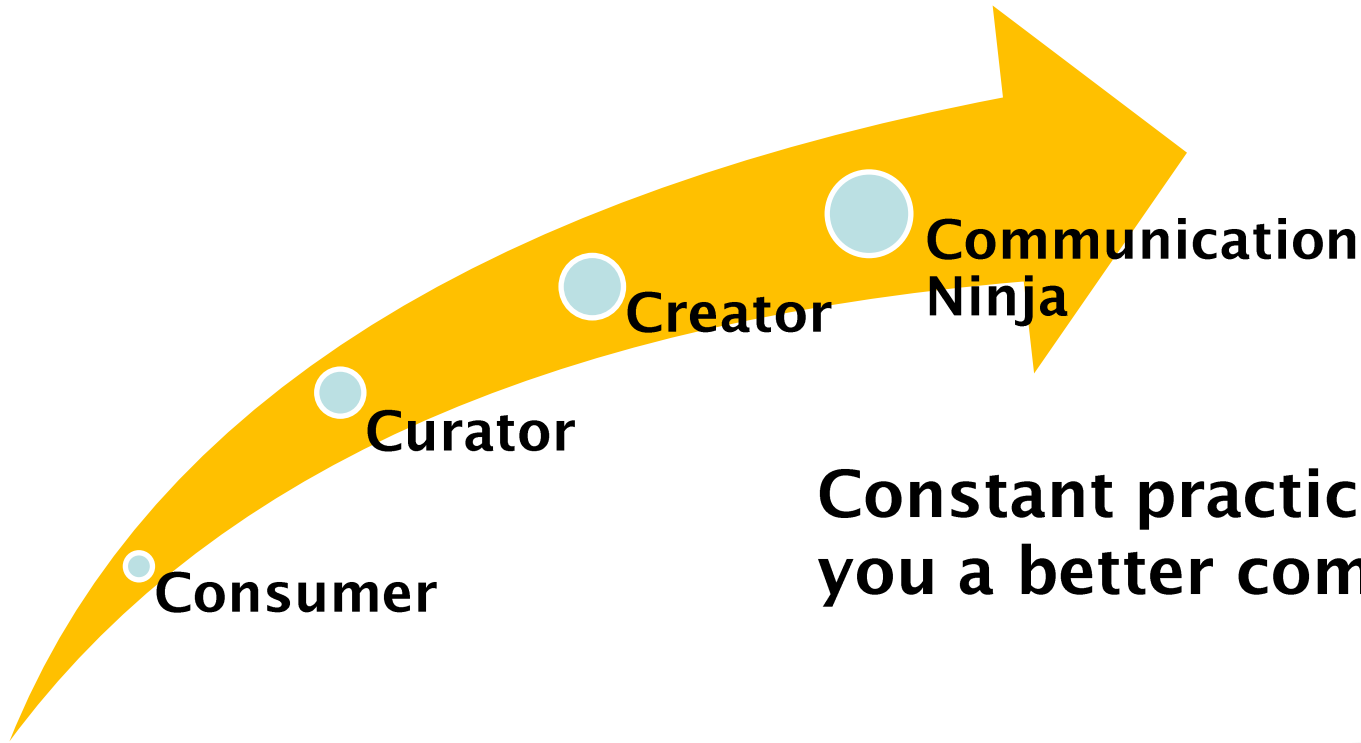
The quark structure of the neutron. (The color assignment of individual quarks is not important, only that all three colors are present.)

Classification	Baryon
Composition	1 up quark, 2 down quarks
Statistics	Fermion
Group	Hadron
Interactions	Gravity, Weak, Strong, Electromagnetic
Symbol	n , n^0 , N^0
Antiparticle	Antineutron
Theorized	Ernest Rutherford ^[19] (1920)
Discovered	James Chadwick ^[2] (1932)
Mass	$1.674\ 927\ 351(74) \times 10^{-27}$ kg ^[2] $939.565\ 378(21)$ MeV/c ² ^[2]



Everyone uses Wikipedia, so it is our responsibility to contribute and keep it up-to-date and accurate

Social networking confidence



**Constant practice makes
you a better communicator**



What is your killer content?

Ask yourself:

- What's **the one thing** I want people to take away from this?
- Can they get it **easily**?



Key questions for a news story

Who?

What?

When?

Where?

Why?

How?



Exercise: Newsroom

Time for exercise: 45 minutes

In teams of 5

Each group will make **5 articles** about their research

- Write each article on a separate sheet of A4 paper
 - **Headline**
 - **Byline** (writer's names)
 - **Standfirst**
 - **150 words** describing key points of the research for an interested audience, written in inverted pyramid style

