

STEM, STEAM & the Australian Curriculum



Exploring Language Learning through an Integrated Japanese and Arts Program

- Examining students' learning, including creativity, when an integrated Languages and Arts approach to programming and teaching is adopted
- The project involves three classes of Year 8 students of Japanese who will undertake an intensive integrated Japanese-Arts program for one term.
- It will be implemented by the teacher of Japanese with assistance from a Japanese Arts student from the University of Tokushima, Japan
- A collaborative venture between the **DECD SA, Glenunga International High School, Tokushima University and Flinders University.**
- It is supported by an Agreement of Educational Internship between the Faculty of Integrated Arts and Science, Tokushima University and Glenunga International High School.

Japanese and the Arts



Japanese

- Research influences across time
- Create a timeline on the wall (mural)
- Japanese words, concepts, culture

Arts

- Japanese art forms
- Use of colour, line, composition
- History of art (Japanese and European- Impressionists/Ukiyo-
- Woodblock printing
- Manga

Interdisciplinary perspectives

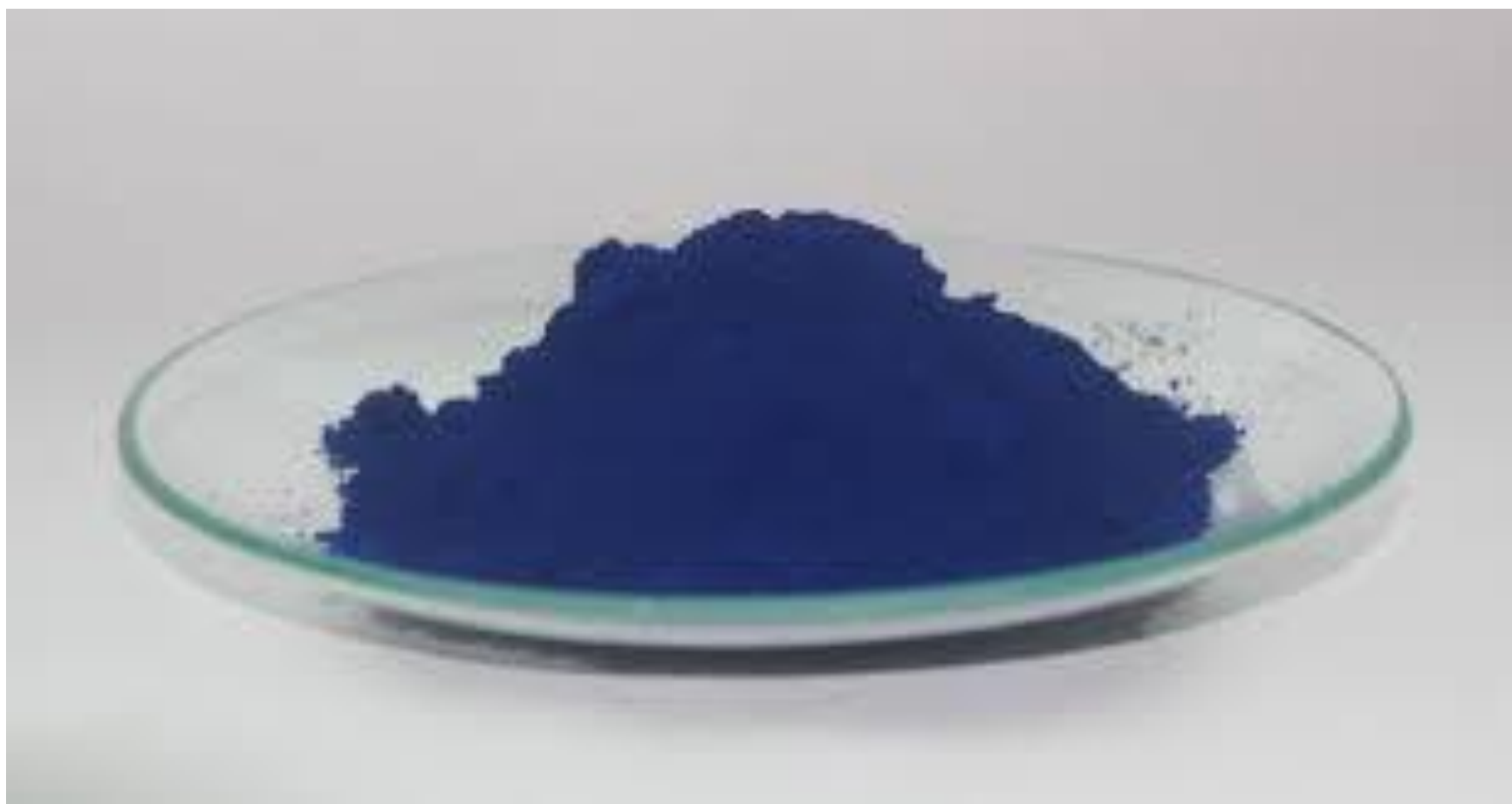
HASS- geography, history,
economics and business,
civics and citizenship,
Languages, Science



1831
1832

富嶽三十六景 神奈川沖
浪裏





History of Prussian blue

- The first modern, artificially manufactured color was Prussian blue. It was made by the color maker Diesbach of Berlin in about 1704. Diesbach accidentally formed the blue pigment when experimenting with **the oxidation of iron**. The pigment was available to artists by 1724 and was extremely popular throughout the three centuries since its discovery.

How Prussian blue is made:

Artificial variety of pigment

Precipitation from the solution of potassium ferrocyanide by a more saturated solution of iron(III)-chloride. The combination of the ferric ion (from the chloride) and ferrocyanide creates the pigment, the two irons have to be in different oxidation states (ferric vs ferrous).

19th century recipe

Dissolve sulphate of iron (copperas, green vitriol) in water; boil the solution. Add nitric acid until red fumes cease to come off, and enough sulphuric acid to render the liquor clear. This is the persulphate of iron. To this add a solution of ferrocyanide of potassium (yellow prussiate of potash), as long as any precipitate is produced. Wash this precipitate thoroughly with water acidulated with sulphuric acid, and dry in a warm place.

In the lab

Materials needed:

potassium ferrocyanide and iron(III)-chloride.

Safety (MSDSs):

Iron(III) chloride, potassium ferrocyanide (at Fisher Scientific)

Method:

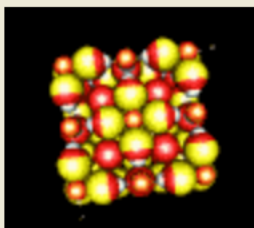
A solution of 2 g FeCl_3 in 100 ml deionized water is slowly poured into a stirred solution of 1 g $\text{K}_4[\text{Fe}(\text{CN})_6]$ in 200 ml deionized water. The blue precipitate is filtered and dried at elevated temperature (c. 100°C)

About the chemical structure:

Chemical name: Iron(III)-hexacyanoferrate(II)

Formula: $\text{Fe}[\text{Fe}^{3+}\text{Fe}^{2+}(\text{CN})_6]_3$

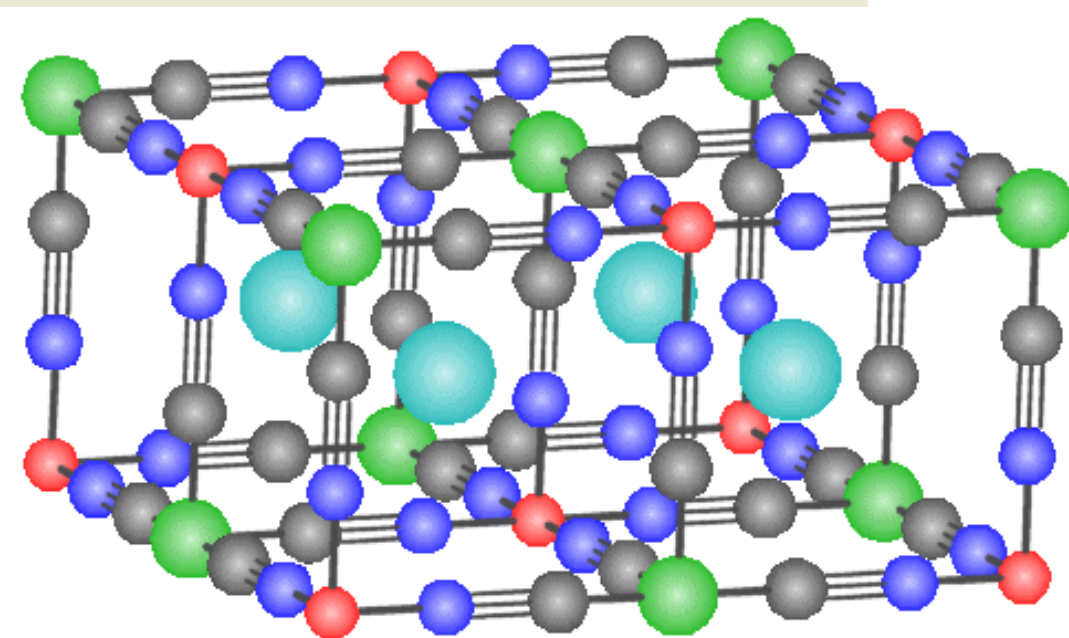
3D model:



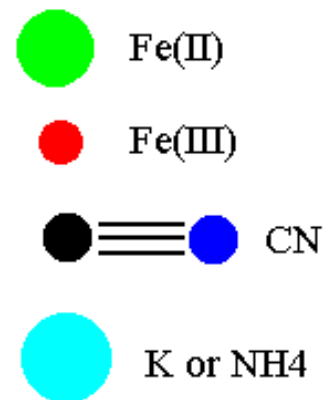
orange = iron, yellow = cyanide ion; crystal water: red = oxygen, white = hydrogen

Crystal system: cubic

Refractive index: isotropic



Prussian Blue
(water-dispersible form)



Year 8 Content Descriptions

Science Understanding

Chemical sciences

- Properties of the different states of [matter](#) can be explained in terms of the motion and arrangement of particles ([ACSSU151](#))
- Differences between elements, compounds and mixtures can be described at a particle level ([ACSSU152](#))
- Chemical change involves substances reacting to form new substances ([ACSSU225](#))
- **Elaborations**
- modelling the arrangement of particles in elements and compounds
- recognising that elements and simple compounds can be represented by symbols and formulas
- locating elements on the periodic table

Science as a Human Endeavour

- **Use and influence of science**
- Solutions to contemporary issues that are found using science and [technology](#), may impact on other areas of society and may involve ethical considerations ([ACSHE135](#))
- People use science understanding and skills in their occupations and these have influenced the development of practices in areas of human activity ([ACSHE136](#))
- <http://www.webexhibits.org/pigments/>

Website about pigments and how to make them

The Arts teacher

- Support
- Co-construct
- Action research
- Cross curriculum connections
(in particular the arts)
- Publish the research

Language teacher

- Language curriculum
- Co-construct
- Action based research
- Professional Learning Community-
- Share the research

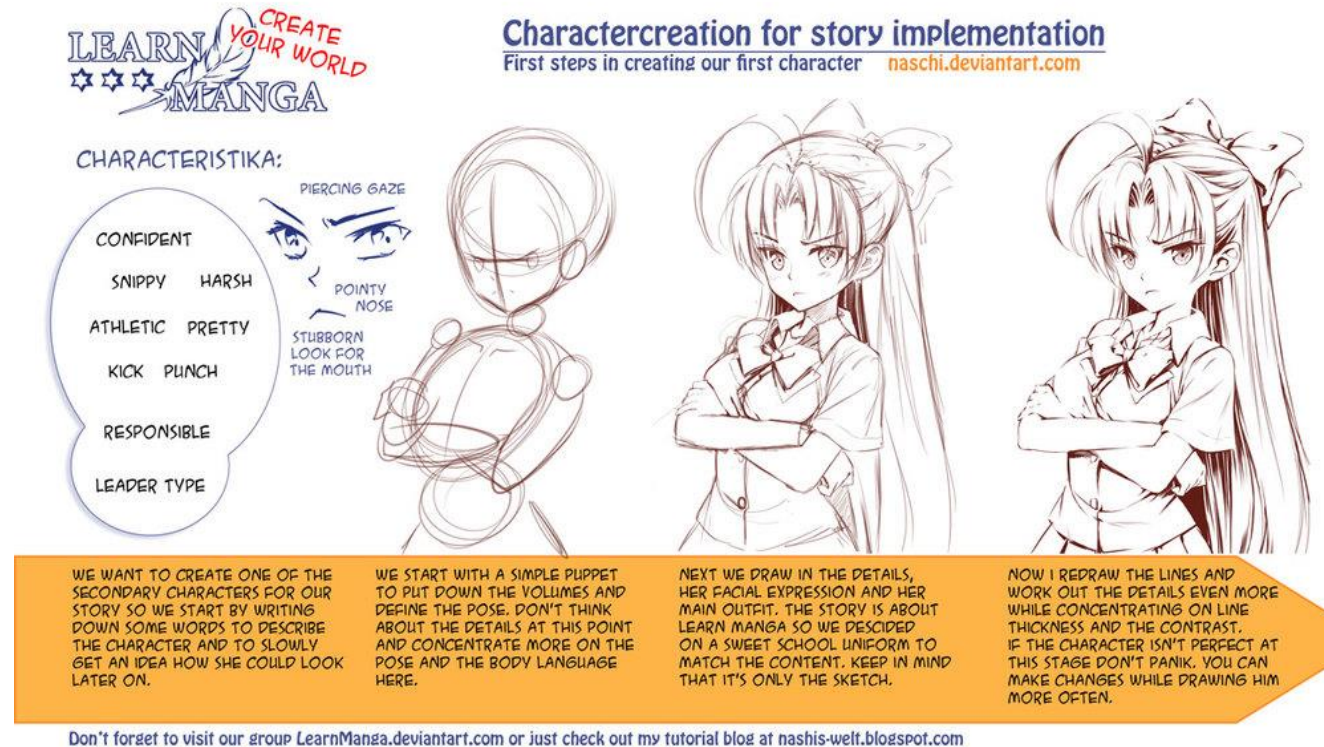


"Shodo," Japanese calligraphy by H.E. Davey Sensei

	Japanese language	Arts
Historical aspects influences	History of Japan and influence on Europe and influence by Europe and US	Printmaking art elements, colour line etc
Looking at artworks	Using Japanese language to describe artworks	Woodblock prints, Hokusai, Manga
Making Manga	Using language to create storyline	Intro to making Manga Styles, shapes colours
Making anime	Using language to create animations. Expressing ideas using Japanese (student voice)	Animation- using ipads Creating sound track
Presenting their work	Displaying artwork and being able to discuss their decisions, stories using Japanese Showing their influences Demonstrating understanding of Japanese influence (presentation?)	Preparing their work for an audience Analysing choices made in artworks Demonstrating understanding of cross cultural connections in art

Steps: Manga

1. Observe and research manga
2. Learn how to draw manga style
3. Write a script **in Japanese**
4. Make the basics of the manga
5. Fill in the details
6. Scan in your pages
7. Using a picture editing software such as Adobe Photoshop or GIMP, clean up your line art and make sure it looks professional
8. Optionally, colour and shade the manga.



Self portrait

Start with a photo

Any style-fantasy clothes etc

Making a statement about themselves

in Japanese

These are displayed and described **in Japanese**

Steps: Anime

1. The Planning. To create a successful anime, lots of planning is required and the first piece is the story
2. Re-draw, perfect and animate
3. Backgrounds
4. Compiling
5. Creating the final cut
6. Audio **Japanese oral**
7. Finalising



Issue
#1

CROSS CULTURAL CONNECTIONS



00:00



-04:17

Appropriation

The reworking of significant historical works is a **potent artistic tool** for commentary on Australia's history, past and present. **Aboriginal artist Daniel Boyd** examines colonial narratives in Australian art, from heroic depictions of Captain Cook to encounters between Aboriginal Australians and European settlers.

Boyd's parody of the British colonial invasion of New South Wales, with its reversal of terms – *We Call them Pirates Out Here* – responds to Emanuel Phillip Fox's *Landing of Captain Cook at Botany Bay, 1770*.

In Boyd's painting, as in the work of Fox, we see Cook stepping to shore. Whilst in Fox's work **Cook is the symbol of civilised English culture**, for Boyd, Cook becomes a pirate ready to take part in the great colonial land grab. Boyd has inserted the faces of his friends as the ship's crew, hoisting the flag whilst Cook surveys the scene with his one-eye. Smoke in the far distance is evidence of an inhabited land in direct contrast to Cook's taking of the land and the later proclamation of it as Terra Nullius.



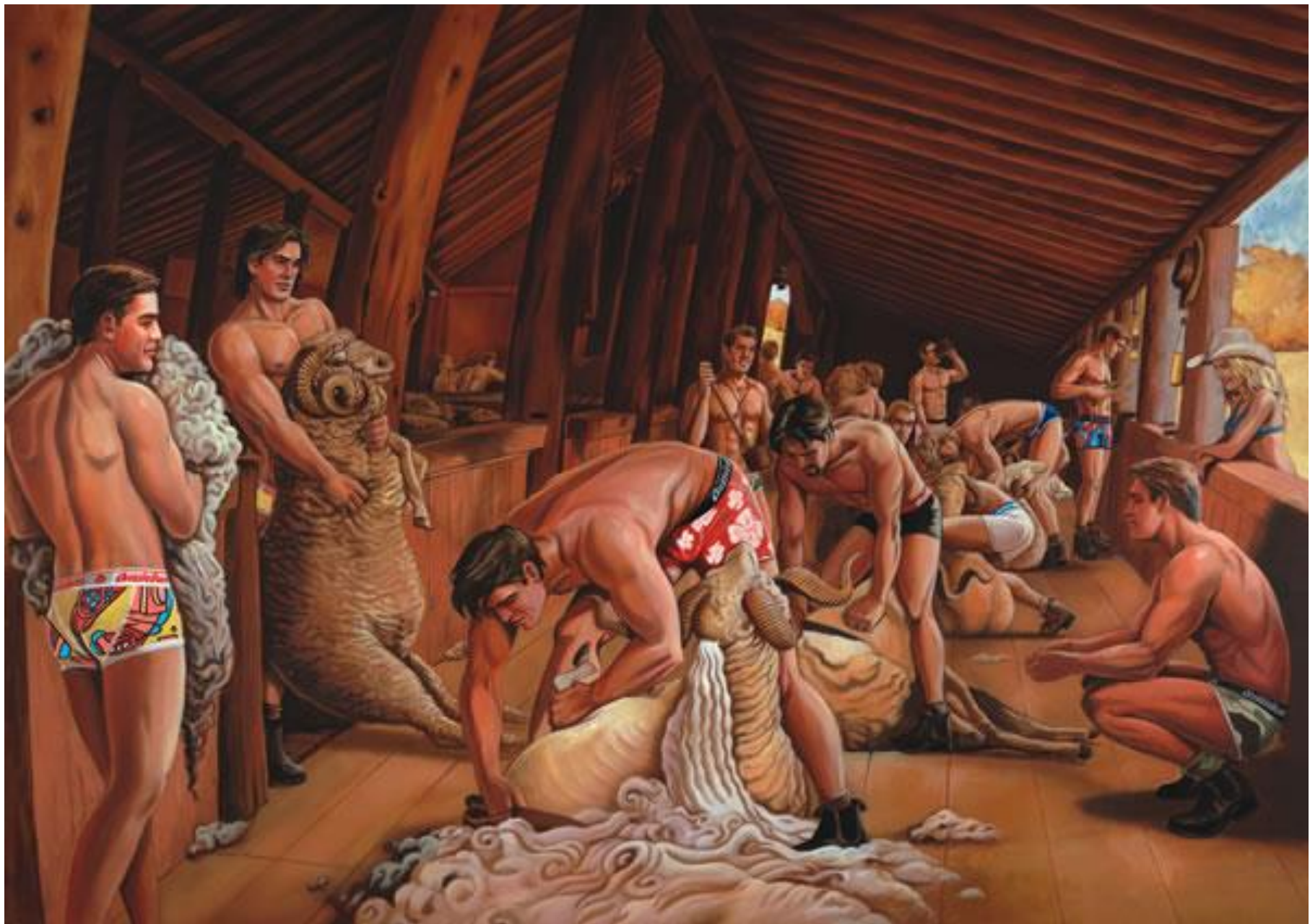
The Landing of Captain Cook at Botany Bay, 1770 by E. Phillips Fox (1902)



We Call Them Pirates Out Here



Tom Roberts *Shearing the rams* 1890



Convicts by Heritage, Guilty by Choice

aussieBum www.aussiebum.com recent advertising campaign for 'aussieBum' underwear.

Il Bioparco è membro ufficiale di:



- Biglietteria**
Ticket office
- Servizi**
Toilets
- Servizi per disabili**
Toilets for disabled
- Fasciatoio**
Changing table
- Area espositiva**
Exhibition area
- Auditorium**
Auditorium
- Aule didattiche A e B**
Lecture halls A and B
- Bioparco shop**
Gift shop
- Area ristoro**
Snack bar
- Area picnic**
Picnic area
- Ristorante Mascagni**
Mascagni restaurant
- Area giochi**
Children's play area
- Punto panoramico**
Observation point
- Area di servizio**
Service area

- 1 Pappagalli e Armadilli**
Parrots and Armadillos
- 2 Giraffe**
Giraffes
- 3 Rapaci notturni**
Owls
- 4 Bisonti europei**
European Bisons
- 5 Banteng**
Banteng
- 6 Cercocebi**
Mangabeys
- 7 Mandrilli**
Mandrills

- 8 Piccole Scimmie**
Small Monkeys
- 9 Fattoria dei bambini**
Children's Farm
- 10 Thar dell'Himalaya**
Himalayan Thar
- 11 Mufloni**
Mouflons
- 12 Capre di Montecristo**
Montecristo Goat
- 13 Licaoni**
African Wild Dogs
- 14 Potamocoro**
Red River Hog

- 15 Gazzella dama**
Dama gazelle
- 16 Macachi del Giappone**
Japanese Macaques
- 17 Lichi del Nilo**
Nile Lechwe
- 18 Addax**
Addax
- 19 Rapaci**
Raptors
- 20 Zebre**
Zebras
- 21 Area Sud America**
South American Area

- 22 Area australiana**
Australian Area
- 23 Lemuri**
Lemurs
- 24 Felini**
Felines
- 25 Coati**
Coatis
- 26 Leoni asiatici**
Asian Lions
- 27 Tigrì**
Tigers
- 28 Focche grigie**
Grey Seals

- 29 Uccelli acquatici**
Aquatic Birds
- 30 Ippopotami anfibi**
Amphibian Hippos
- 31 Guanaco**
Guanaco
- 32 Kulan**
Asiatic Wild Ass
- 33 Orsi bruni**
Brown Bears
- 34 Lupi**
Wolves
- 35 Savana africana**
African Savannah

- 36 Bucorvi abissini**
Abyssinian Ground Hombills
- 37 Grande voliera**
Big Aviary
- 38 Oranghi**
Orangutans
- 39 Scimpanzé**
Chimpanzees
- 40 Alligatore della Cina**
Chinese Alligator
- 41 Drago di Komodo**
Komodo Dragon
- 42 Fennec**
Fennec Fox

- 43 Suricati**
Meerkats
- 44 Rettillario**
Reptile House
- 45 Cammelli**
Camels
- 46 Casuario**
Casowary
- 47 Ippopotami pigmei**
Pygmy Hippos
- 48 Elefanti asiatici**
Asian Elephants



*A multidisciplinary conference presented by ARIA-SA and
the Science Attaché, Embassy of Italy, Canberra*



*Embassy of Italy
Canberra*

The Impact of Italian Science in the World from the Renaissance to the Present

Professor Marcello Costa

*Matthew Flinders Distinguished Professor of Neurophysiology,
Flinders University*





Art preceded and is continuous with science in human history.
The Romans were close to developing science based on artistic realism and sense of space (Pompei 64 AD)

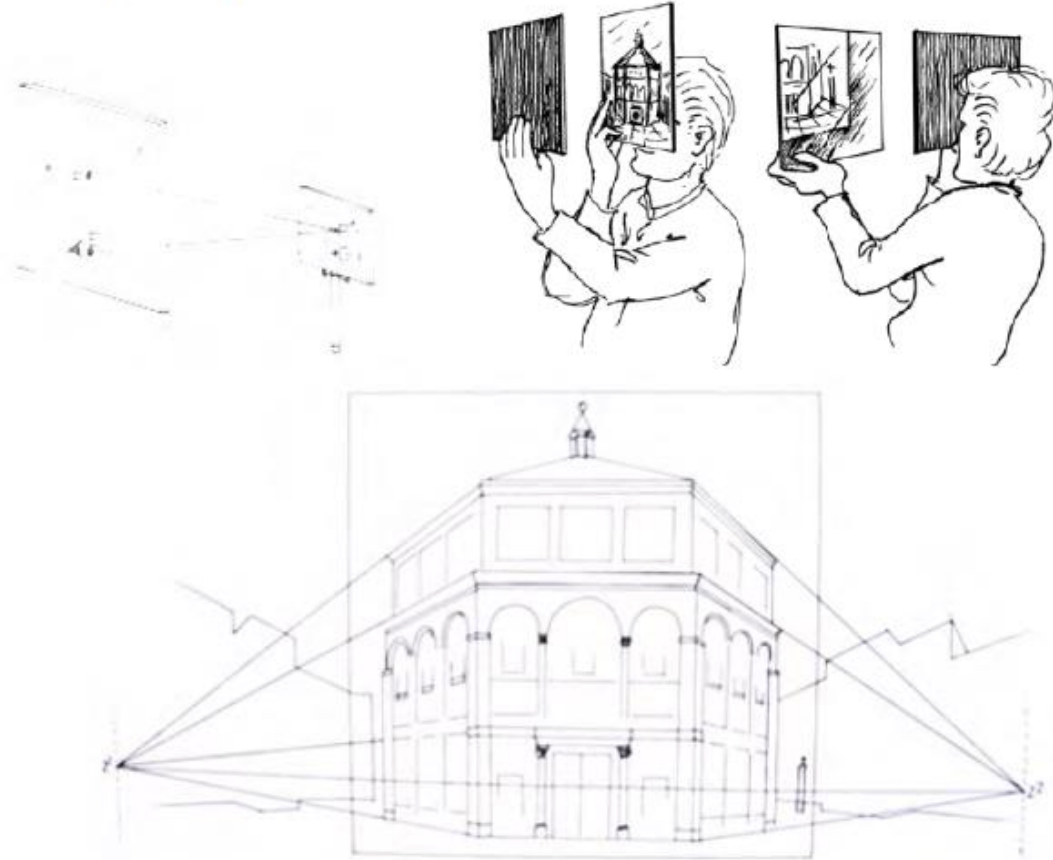


Filippo Brunelleschi
(1377-1446)



PERSPECTIVE

Brunelleschi at the beginning of 'il Quattrocento' invents a new method to represent objects in space (in perspective) and draws the baptistery from the entrance of the Cathedral in Florence. This marks the beginning of the **Renaissance** after the Dark Ages, with the development of **geometrical perspective**.



The apotheosis of geometrical space



School of Piero della Francesca;
“veduta della città ideale”, 1475

Geometry and proportions

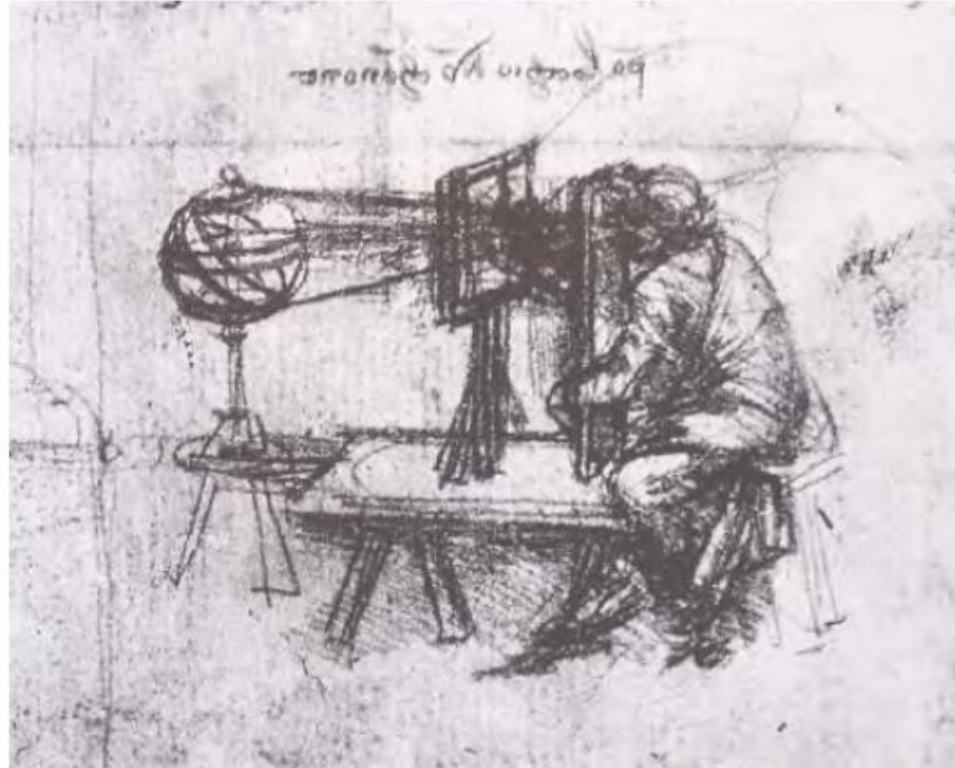
Influence of geometry started from from art then extended to commerce, architecture, cosmology and the birth of anatomy (biologicals sciences) and cosmology (physics)



Self-portrait (c.1512-1515)

Leonardo da Vinci: using perspective to represent difficult objects
(1510 Atlantic Codex)

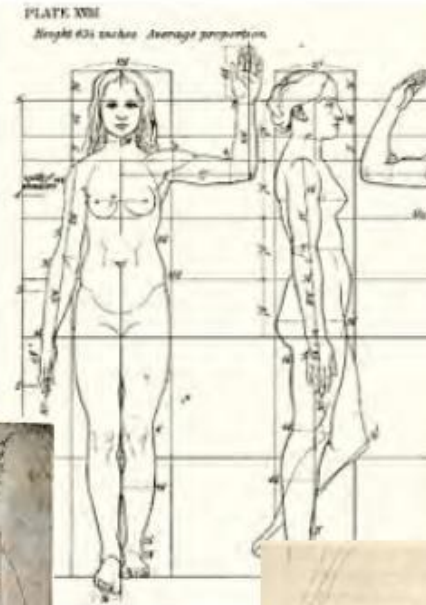
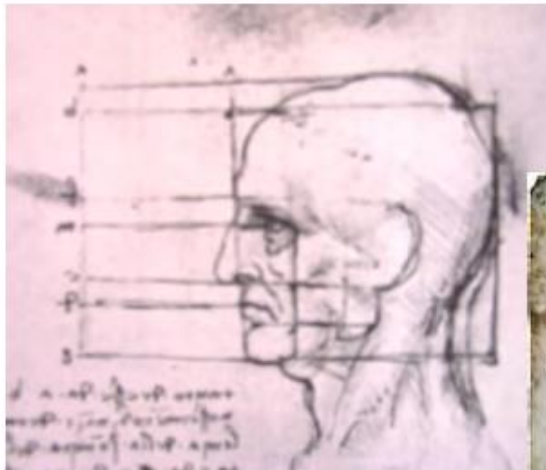
Application of geometrical perspective to science



Painting becomes geometry and quantitative

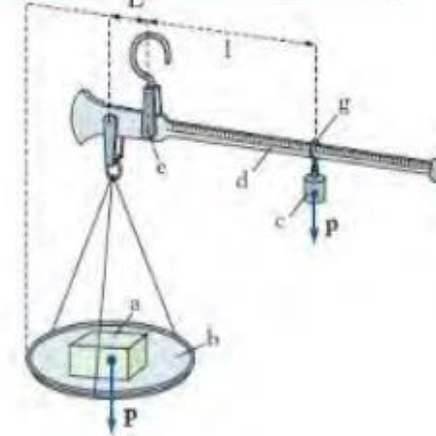
Measurements of natural objects and phenomena in the Renaissance revealed the desire of naturalising all aspects of the universe and marked **the birth of experimental observations and modern science**

Leonardo da Vinci;
human proportions



Geometry and applied mathematics from the market to art and science

The use of **mathematics** applied to the need in the market for **measuring weight and costs**, and then for **interest rates** of the **banking system**, led to search for **universal rules** of proportions; *De divina proportione* (Luca Pacioli ca 1447-1517) referring to the organicity of the universe (*concinntitas*).



This views generated interest in the relation between geometry and the correspondence between micro and macro cosmos explored in the mid 15th Century.

He was the father of accounting

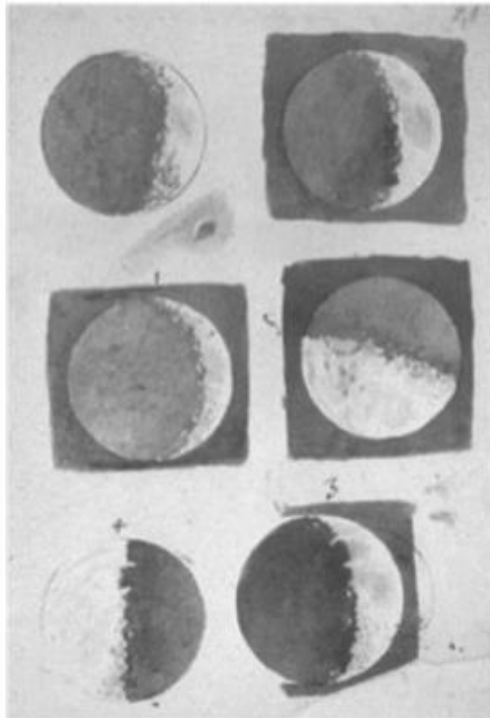
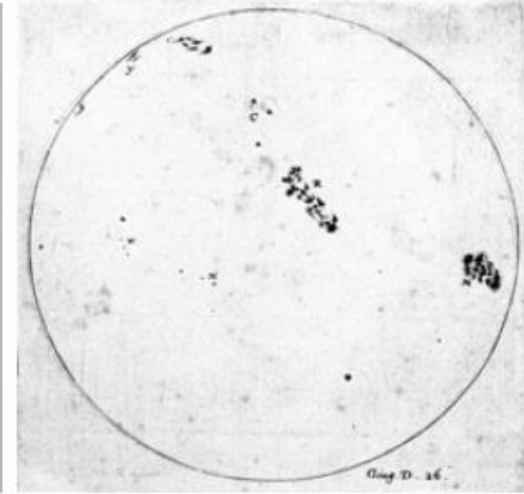
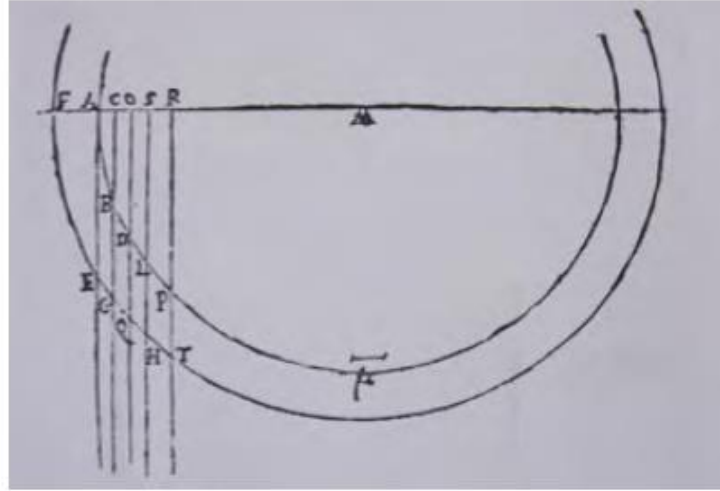
L.B. Alberti, *De re aedificatoria*, 1450; Filarete, *Trattato d'architettura*, 1460; Francesco di Giorgio Martini, *Trattato di architettura civile e militare*, 1480.

[illegible]

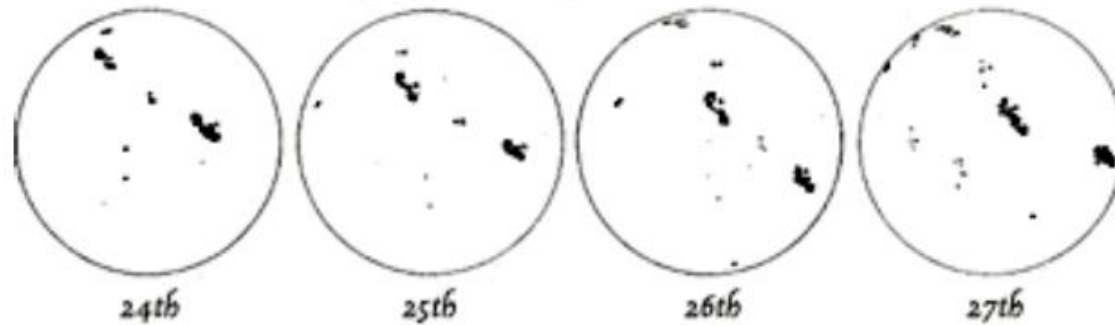


Space becomes Geometry with Galileo Galilei (1564-1642)

Sun spots projected by perspective



Sunspots drawn by Galileo, June 1612



From art in the Renaissance to modern science

- Space becomes pictorial in the Renaissance
- Painting becomes Geometry in the Renaissance
- Space becomes Geometry with Galileo Galilei
- Geometry after Galileo becomes Physics, Mathematics, Chemistry and Biology

