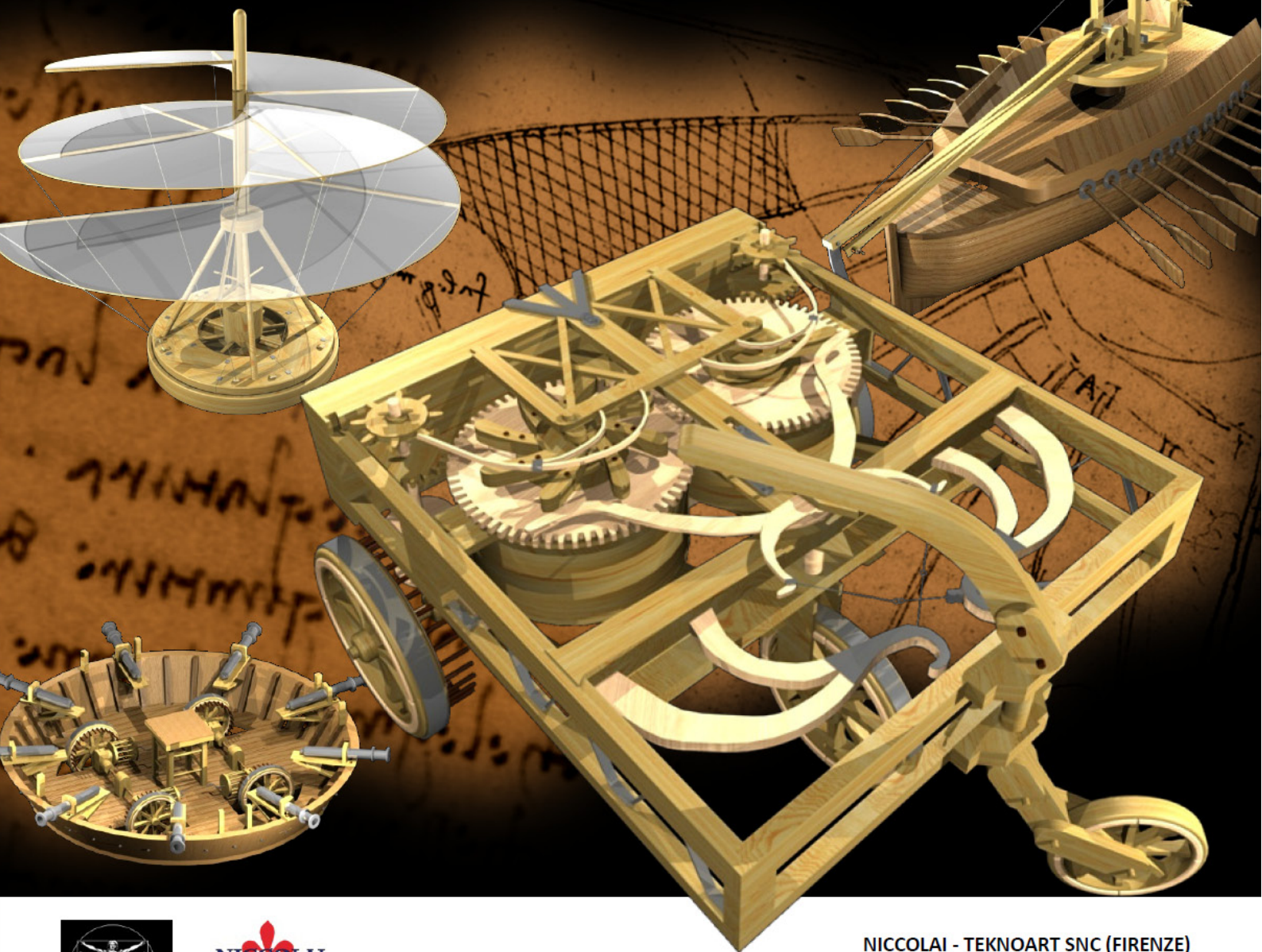


# DAVINCI MACHINES

## The Original Machines Exhibition

Interactive and Working Machines Brought to Life as Leonardo Intended  
Created by World Acclaimed NICCOLAI TEKNOART, Florence



**NICCOLAI**  
SNC  
TEKNOART  
FIRENZE

NICCOLAI - TEKNOART SNC (FIRENZE)  
ARTISANS OF FLORENCE PTY LTD  
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# DA VINCI MACHINES

Presented by

**NICCOLAI - TEKNOART SNC (FIRENZE)**

ARTISANS OF FLORENCE PTY LTD

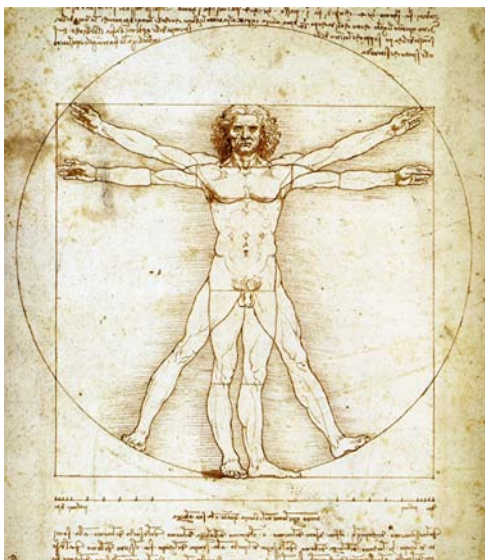
©2009 NICCOLAI SNC

Together with

**THE MUSEUM OF LEONARDO DA VINCI, FLORENCE – ITALY**

Under the Auspices of

Comune di Firenze (Florence) Professor Carlo Pedretti, UCLA (Los Angeles),  
Associazione Culturale – La Città Ideale (Vigevano)



### VITRUVIAN MAN

*The line of text immediately below the drawing of Vitruvian Man, written in Leonardo's characteristic right to left mirror writings reads "the length of a man's outspread arms is equal to his height".*

*Other notes below the drawing read:*

*From the roots of his hair to the bottom of his chin is 1/10 of a man's height*

*From the bottom of the chin to the top of the head is 1/8 of his height*

*From the top of the breast to the roots of the hair will be the 7th part of the whole man*

*From the nipples to the top of the head will be the 4th part of man*

*The greatest width of the shoulders contains in itself the 4th part of man*

*From the elbow to the tip of the hand will be the 5th part of a man*

*From the elbow to the angle of the armpit will be the 8th part of man*

*The whole hand will be the 10th part of the man*

*The distance from the bottom of the chin to the nose and from the roots of the hair to the eyebrows is, in each case the same, and like the ear, a third of the face.*

Leonardo da Vinci

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## MESSAGE FROM THE MANAGING DIRECTOR



I am a Physicist. I taught and published in Australia, a wonderful country, providing me with a comfortable and enjoyable life. Ten years ago however, aged fifty, I wanted to rediscover my roots - relive my youth, and return to Italy, my country of birth.

I got more than I bargained for. I met the Niccolai family and consequently Leonardo da Vinci. What I am about to describe is the result of my two years experience in Florence, working, studying and living, which culminated in my involvement in this wonderful project. Most of my story is current accepted academic thinking but some is from my personal journey. In essence, it is about the wonderful world of Leonardo da Vinci and his relevance in the 21st century.



*View of Florence from Boboli Gardens by Camille Corot*

Leonardo was born on April 15 in 1452 near Vinci, a small medieval town north-east of Florence between Pistoia and Lucca, situated on a picturesque hillside where olive trees and vineyards are still grown. Hidden in the foothills of the Apennine Mountains, Vinci is situated in proximity of the ancient road *Via Francigena*. In Leonardo's time, the road had already been in use for over 500 years. Used first by the *Longobards* (settlers from northern Europe to the northern plains of Italy) and later by the Franks (Germanic settlers of France) - hence its name.

It was for me a great discovery! Now almost vanished, *Via Francigena* was an elevated narrow road providing safe passage away from the more dangerous Roman roads of the plains, used for centuries by the many pilgrims from all over continental Europe and England on their way to Rome. It was an important road dotted with bustling medieval towns such as *San Gimignano*, *Volterra* etc... terminating in magnificent *Siena*. *Via Francigena*, in fact, was a major transport route for medieval northern Europe's goods, customs and genetic stock (for example the Niccolai believe to be of the same genetic roots as the Nichols of Germany).

For me, I find it not surprising that 'local boy Leonardo' inherently developed as an embodiment of many of the characteristics we assume typical of the diverse tribes of Europe. This is the region in which the 'Universal Man' was created. He is methodical in his investigations, chaotic and repetitive in his reporting, predictably competent, bright and curious, unpredictable in his genius but above all, he never gives up in the face of failure - Leonardo da Vinci is the most inspirational figure of the past millennium.

Back in the 15th century, the economy of Florence was founded on industry, commerce and banking and was larger than that of the whole of England - truly the 'Big Apple' of the times. Within 50 years, it was transformed from a medieval borough (like San Gimignano and Siena are still today) to the present day flamboyant, Renaissance influenced, city of Florence. The 15<sup>th</sup> century was also a period in which there were many *first offs*. 'Renaissance men' were laying the foundations for the revolution in science, art, literature, industry, financial systems, commerce, communications and technology ... in other words, the **Modern Revolution** had begun.

Luigi Rizzo  
Managing Director  
Niccolai-Teknoart SNC (Firenze)  
Artisans of Florence Pty Ltd

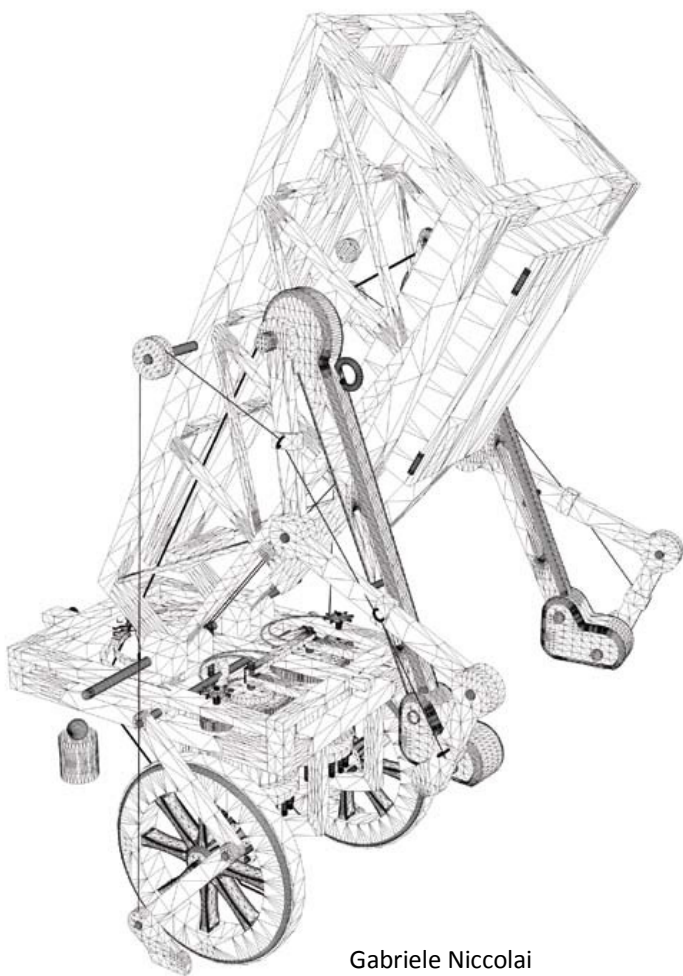


# THE ARTISANS AND THE MACHINES



Historical documents reveal that Leonardo da Vinci commissioned local artisans, the only craftsmen he trusted, to construct a few of the machines he designed. Unfortunately none of these machines have survived to the present day. The systematic study of Vincian Technology is a recent phenomenon of the past fifty years. Since establishment of the first technological museums, scholars and artisans have collaborated to interpret Leonardo's ideas.

In the late 1950's the first Museums of Leonardo Da Vinci machines were established in Vinci and Milan. My father Carlo, as a capable young apprentice in Florence, was one of the artisans commissioned by the Da Vinci Institute to construct Leonardo's machines. Working in a workshop, not far from where Leonardo learned his craft and using the materials of his time, models of the inventions came to life. Today these models can be seen at the permanent Leonardo Da Vinci Museum in Florence.



Gabriele Niccolai  
Director of Projects  
Head of Research & Development  
Niccolai-Teknoart SNC (Firenze)  
Artisans of Florence Pty Ltd

During the 1990's, with assistance from the latest in computer technology, it became possible for us to advance the technology and craftsmanship in the reproduction of Leonardo's machines. Under the critical eye of eminent scholars such as Professor Carlo Pedretti of UCLA, California important discoveries were made and Leonardo's drawings came to life. The models built by my family are featured in the official Encyclopaedia of Leonardo da Vinci edited and published by De Agostini (It).

In 2002, the Niccolai family together with a group of Florentine artisans established the company Teknoart S.R.L. and more recently NICCOLAI-TEKNOART SNC (FIRENZE), The Artisans of Florence Pty. Ltd.

Today, in Florence utilizing the latest advancements in cad technology together with the expertise of historians, scholars and skilled artisans, the company produce and manage the largest travelling exhibitions of Leonardo da Vinci machines in the world.

The catalogue of fully-functional, interactive machines includes those that have been reproduced from newly discovered Codices and which haven't been previously displayed in any museums.

Interpretation of language is very important as is computer technology which assists us to calculate the exact scale and proportion of each model and finally, there is a great deal of skill required to identify the secret clues, the decoys and encryptions planted by Leonardo.

All of which make a very interesting subject of a forthcoming book **soon to be released**.

## ABOUT THE MACHINES

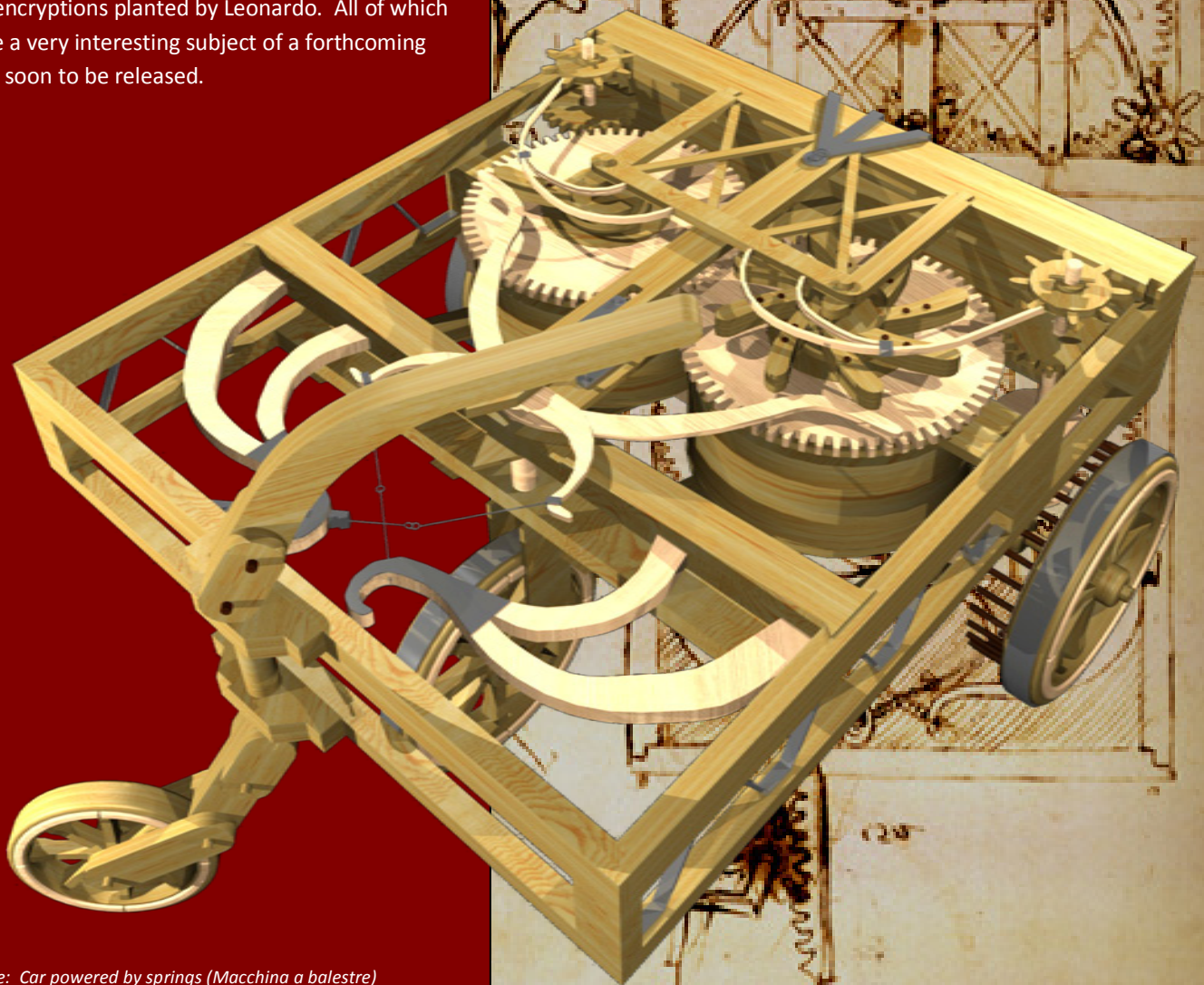
The machines displayed in the **DA VINCI MACHINES EXHIBITION** have been constructed over a number of years by the team of Florentine artisans from the **Niccolai-Teknoart** group.

They are the result of fine craftsmanship, interpretation, skill and modern day technology.

Firstly, the artisans pay particular attention to detail in order to reflect Leonardo's objectives; they use only materials of the time - wood, cotton, brass, iron and cord.

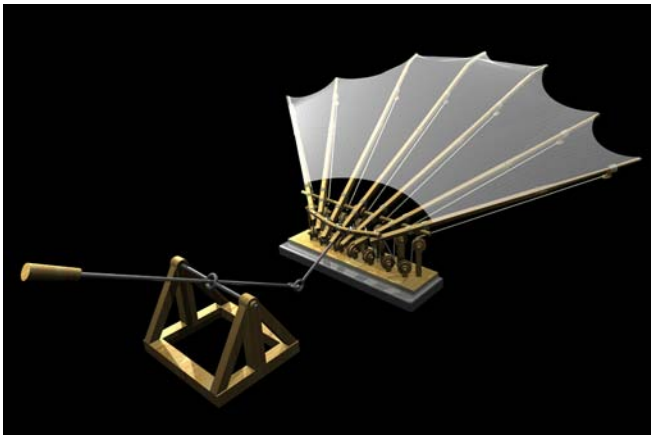
Then interpretation of language is very important as Leonardo used local idioms, familiar only to *Florentini*.

Computer technology is also part of the process, used to calculate the exact scale and proportion of each model and finally, there is a great deal of skill required to identify the secret clues, the decoys and encryptions planted by Leonardo. All of which make a very interesting subject of a forthcoming book soon to be released.

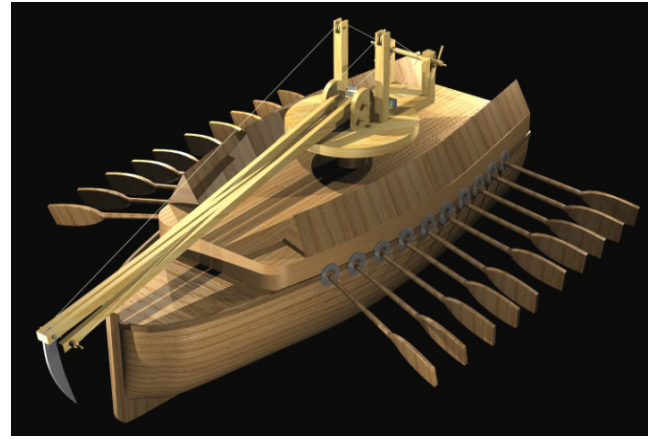


Above: Car powered by springs (*Macchina a balestre*)  
LV 12 Codice Atlanticus F.812r





Above: Flapping wing experiment (Ala Battente)  
LV 20 Manoscritto B.F.88v

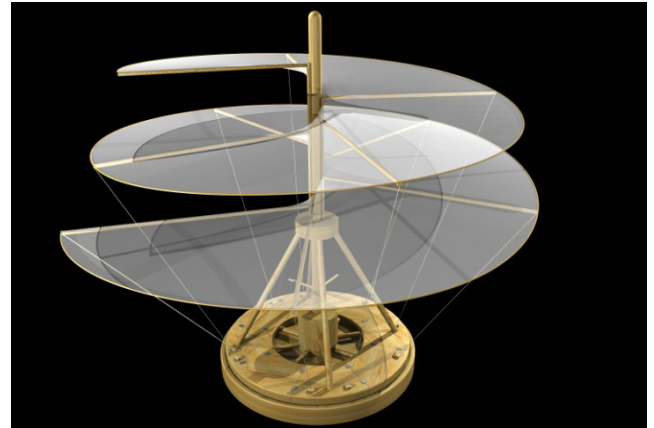


Above: Boat with blades 'The Scorpion' (Barca con Falce –Escorpio)  
LV 43 Codice Ashburnham 2037 F.8 r

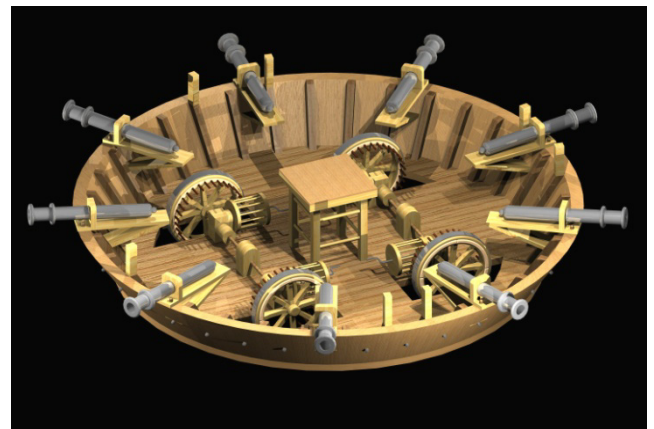
The interactive machines (many of which are scale models and some are life size), are a popular aspect of the **DA VINCI MACHINES EXHIBITION** as visitors can touch and handle these models to gain a first-hand appreciation of how they work.

Explanatory notes and illustrative panels with Leonardo's drawings accompany each model.

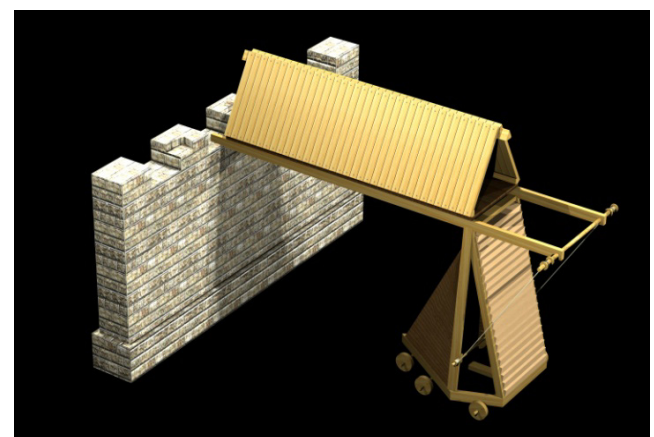
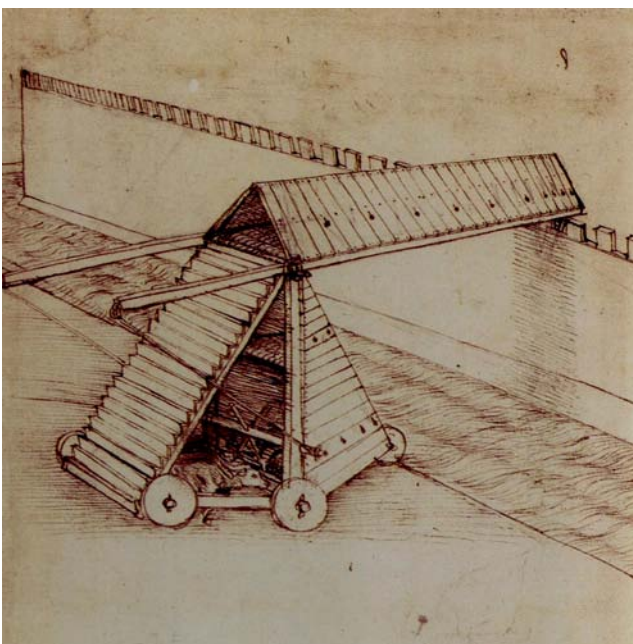
The copies of the Codices together with animated computer programs enhance the scientific, cultural and educational experience of each exhibit.



Above: Air screw (Vite aerea)  
LV 21 Manoscritto B. F.83 v



Above: Tank (Carro Armato)  
LV 57 Codex British Museum F.1030



Above and left: Defence of town walls (Difesa Delle Mura)  
LV 44 Codex Atlantic F.139 r

## ABOUT THE EXHIBITION

*Leonardo da Vinci dedicated himself with passion to scientific studies in anatomy, biology, mathematics and physics. His manuscripts, known as **Codices**, exhibit ingenious solutions to practical problems of his time and he was able to imagine future possibilities such as flying machines and automation.*



*At Leonardo's death all his writings and sketches were inherited by his trusted assistant and scholar, Francesco Melzi. He kept and catalogued them carefully but after his death most of the work was dispersed. About a quarter of Leonardo's manuscripts have survived, most have been grouped by later scholars in Codices and Manuscripts of various chronology and size.*

The original concept, worldwide, to create an exhibition of 'interactive machines' based on Leonardo's notebooks was conceived by the Niccolai Firm in the early 1990's.

**Over the past couple of years an expanded Niccolai, Teknoart, Artisans of Florence Group has been able to uncover further missing (hidden?) details, making the machines even more realistic. Thus creating a truly unique exhibition – one that is more relevant in today's society.**

Working in conjunction with the Leonardo da Vinci Museum in Florence and with the endorsement of eminent scholars and historians, the exhibition that 'brings to life' Leonardo's genius and inventions was realised. Since then the exhibition has travelled the world showing in major cities and centres that include Florence, Siena, Venice, Naples, Warsaw, Madrid, Berlin, Hong Kong, Dubai, Melbourne, Sydney, Perth, Canberra, Auckland, Taipei, Vienna, California, Texas, Montreal, Chicago, Detroit and now Hollywood.

**The DA VINCI MACHINES EXHIBITION proudly presents in excess of 60 machines from original da Vinci drawings. Featuring his amazing flying machines, nautical, hydraulic and architectural innovations, ground-breaking applications of civil engineering and incredible war machines. There are 15 high quality reproduction artworks, giant art panels, computer animations, film screenings and rare copies of Leonardo da Vinci Codices - *Codex Atlanticus* (1478–1519) the largest with 401 sheets, held in the Ambrosiana Library Milan, and *Codex on Anatomy Windsor Collection* (1502- 1513) Windsor Castle Royal Library, London**

The Exhibition is presented and displayed in five themes:

<b>Theme 1</b>	<b>War Machines</b>
<b>Theme 2</b>	<b>Flying Machines</b>
<b>Theme 3</b>	<b>Nautical &amp; Hydraulic</b>
<b>Theme 4</b>	<b>Principles of Mechanics</b>
<b>Theme 5</b>	<b>Artwork (Reproductions)</b>



THEME 1 – WAR MACHINES



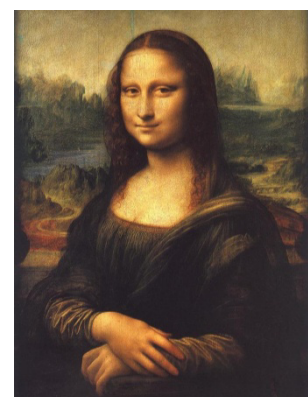
THEME 2 – FLYING MACHINES



THEME 3 – NAUTICAL AND HYDRAULIC



THEME 4 – PRINCIPLES OF MECHANICS



THEME 5 – ARTWORK (REPRODUCTIONS)



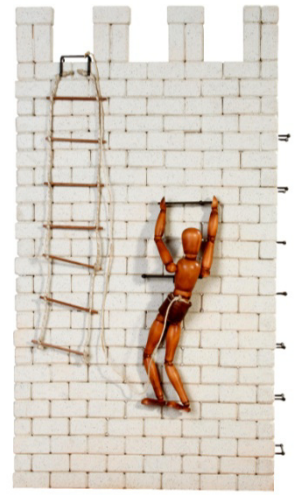
## WAR MACHINES – Theme 1

The Italian Renaissance peaked in the late 15<sup>th</sup> century as foreign invasions plunged the region into turmoil.

Although Leonardo's work on 'War Machines' seems to contradict his respect for nature, he was still a man of his time and the need for military engineers provided him with employment, travel opportunities and the chance to continue his scientific work unhindered.

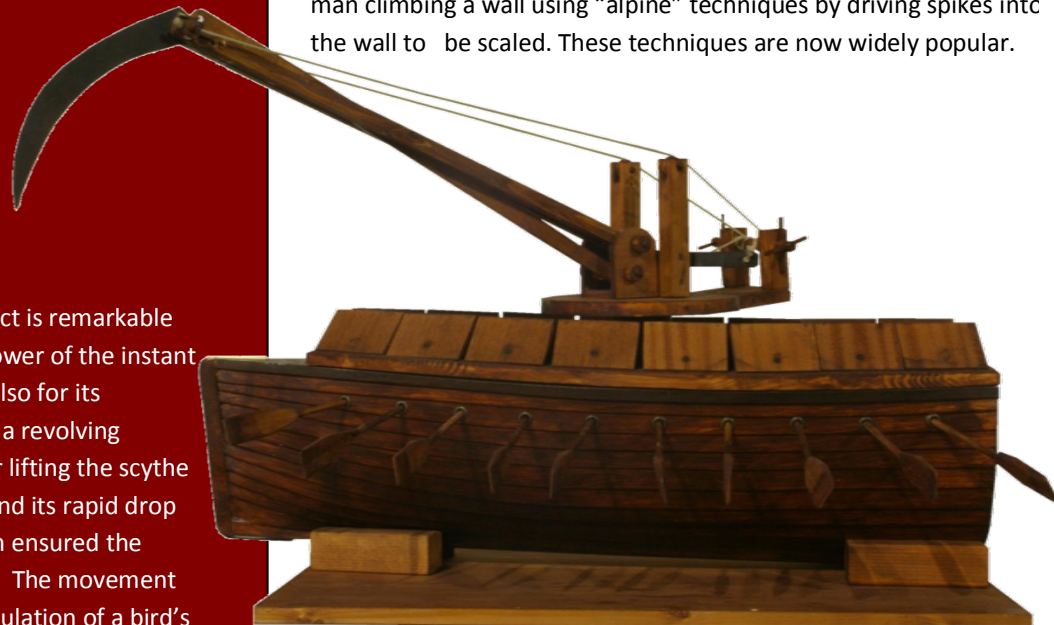


The Escorpio (Scorpion) project is remarkable not only for the aggressive power of the instant drop of the large scythe but also for its manoeuvrability by means of a revolving platform. The mechanism for lifting the scythe worked by crank and gears, and its rapid drop together with this mechanism ensured the effectiveness of the machine. The movement of the scythe mimics the articulation of a bird's wing – showing that Leonardo was once again a pathfinder for the new science: BIOMIMETICS



Above: Assault techniques (*Tecnica D'assalto*)  
LV 45 Codice Atlantico F.59v

Leonardo invented many attack and defence systems. Here we see man climbing a wall using "alpine" techniques by driving spikes into the wall to be scaled. These techniques are now widely popular.



Above: Boat with blades 'The Scorpion' (*Barca con Falce-Escorpio*)  
LV 43 Codice Ashburnham 2037 F.8r

Below: Leonardo's design for an armoured vehicle made from wood and operated by eight men was made in circa 1487. The 'tank' was operated by turning the cranks. The solution of making this tank 'operational' was only achieved by the uncovering of a 'hidden mechanism'.

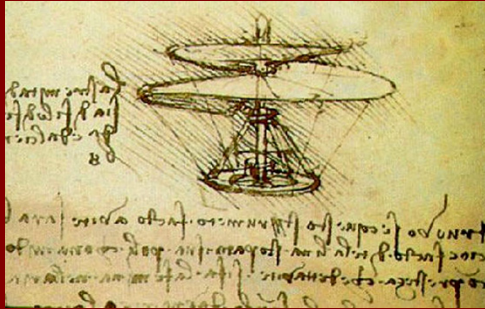


Above: Tank (*Carro Armato*) British Museum F.1030

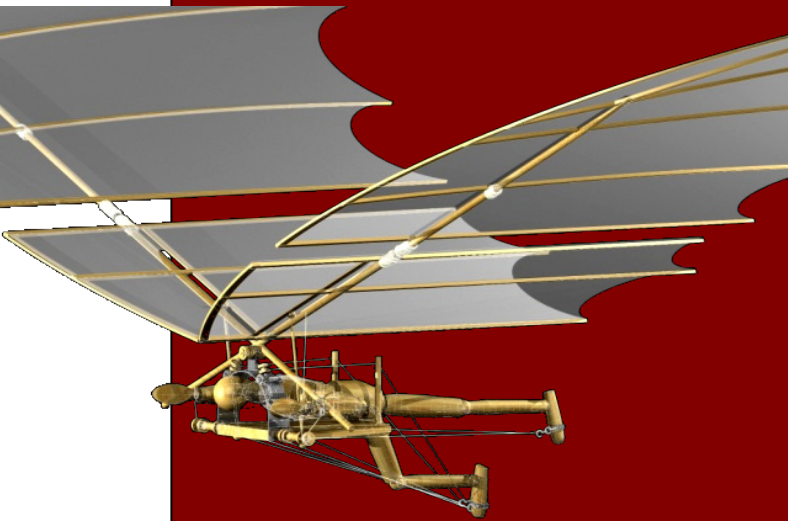


## FLYING MACHINES – Theme2

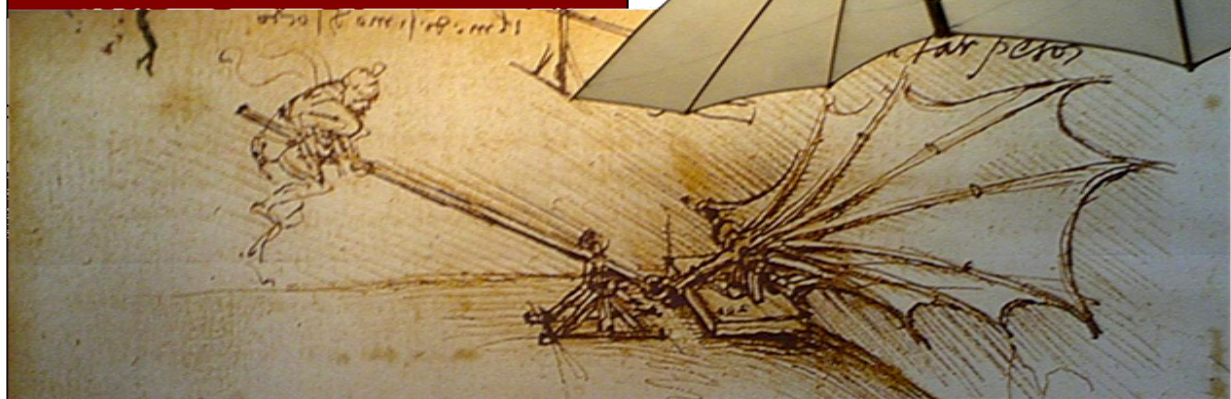
From his childhood days, roaming the hillsides of Tuscany, Leonardo was thoroughly mesmerised by birds. He dreamed of man being able to fly. Later, he filled notebooks with sketches and studies that focused on the way wings move – their curve, their strength and their flexibility. He studied how creatures of flight become and stay airborne, noting how wings interact with air currents, demonstrating an unprecedented knowledge of aerodynamics.



Based on his observations of birds in flight, Leonardo designed many man-powered flying machines.



In the image below, Leonardo has based the wings on those of a bat. He usually substituted wood for bone, leather for muscle and cloth for skin, and constructed an elaborate system of hinges, ropes and pulleys which enabled the pilot to operate the wings with his feet, as detailed in the image above.



Left and Above: Air screw (Vite aerea) LV Manoscritto B F.83v

The drawing on the left is certainly one of Leonardo's most famous designs since in it one recognises an ancestor of the helicopter. This craft made of reeds, linen, and iron thread would have been operated by four men who, by rotating a shaft, could lift themselves off the ground.

It is clear that the mechanism so conceived could never have taken off, but the idea remains that with an adequate force the machine could actually have spun itself into the air and surely enough, Leonardo had hidden such mechanism into his drawing.



Above: Vertical Ornithopter 'Vertical Flying Machine' operated by one man Codice Atlantico F.824v



## NAUTICAL AND HYDRAULIC – Theme 3

The drawing of the breathing apparatus on the right is one of Leonardo's most famous ideas to aid humans to remain underwater, no doubt based on his anatomical studies on the behaviour of fluids in the lungs and the heart.

Leonardo had realized that the ancient apparatus of a single breathing tube was inadequate, if not deadly, since it did not allow for an effective air replacement; in the long run, the expired air would only stagnate in the pipe, obstructing the incoming fresh air. To function, the apparatus must then channel fresh air and stale air separately. For this Leonardo adopts two tubes, each fitted with a valve that regulates the opening and closing. The two valves are operated by breathing and work alternately: when one opens the other closes. In this way, by inhaling, fresh air flows in the first tube, while exhaling, stale air is pushed in the second and drained to the outside.



Above: Arched bridge (Ponte Arcuato) LV38 Codice Atlantico F.22r

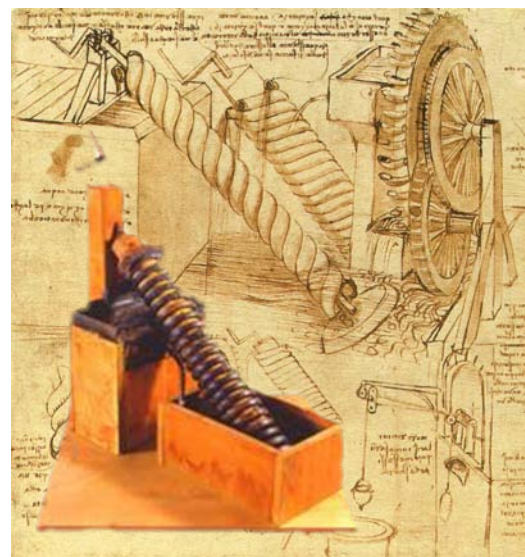
Above is a model after one of the 'light and strong bridges' Leonardo designed and promised in a letter to the Duke of Milan. To be made of materials easy to find such as small logs and easy to carry, it was assembled by interlocking the logs without ropes or tools. It was strong enough to support the weight of a number of people and allowed for rapid and unexpected 'troop deployment'.



Above: Movable bridge (Ponte Mobile)  
LV26 Codex Atlantico F.855r



Above: Diver (Palombaro) LV 55 Codex Arundel F.24v



Above: Archimedes' screw (Vite de' Archimede)  
LV 02 Codex Atlantico F.26v



Above: Paddle boat (Barca a Pale)  
LV 25 Manoscritto B.F.83r

# PRINCIPLES OF MECHANICS – Theme 4

Throughout his life, Leonardo da Vinci was an inventive builder who thoroughly understood the principles of mechanics of his time and largely contributed in many ways to advancing them.

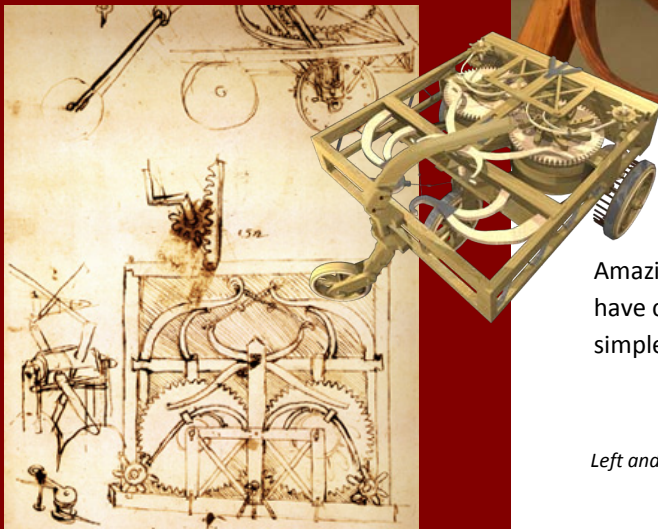
According to Leonardo's observations, the study of mechanics, with which he was quite familiar as an architect and engineer, also reflected the workings of nature.



Left: Bicycle (Bicipietta) LV 31 Codice Atlanticus F.133v

Right: This is one of the most famous Leonardo's inventions. It is a self moving car propelled by a complicated mechanism powered by leaf springs (balestre). The car system suggests that an operator would have to hand-load the leaf springs.

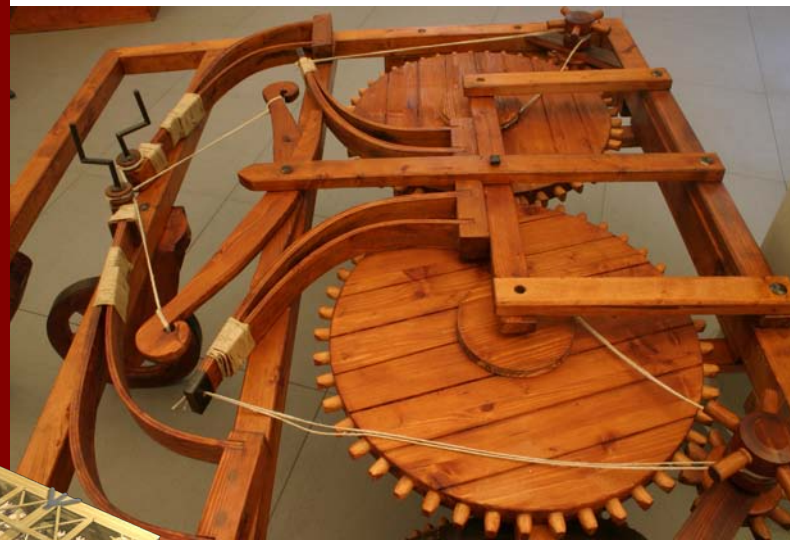
The stored energy is transmitted to the driving wheels by means of a complex set of gears. He also incorporated a small rudder-wheel to steer the car.



Above: Corkscrew mechanism (Meccanismo Elicoidale)  
LV 07 Codex Madrid I F.17v

Leonardo's machines often require the transformation of motion from one plane into another using a "universal screw" – a mechanism often employed by Leonardo because it spread frictional resistant forces over the many grooves providing extra safety for its users – a concept quite revolutionary for the time.

Left: This is one of the many mysteries still surrounding Leonardo's life and work. During restoration of the Codex Atlanticus, this drawing was found between two glued in pages. The lack of detail in the drawing and the signature of Leonardo's pupil, Salai, lead us to think that the drawing is not by Leonardo, but by his pupil, who may have copied the bicycle from a model seen in his master's workshop.



Amazingly, recent mechanical details and historical facts have come to light making the operation of the car much simpler and more plausible.

Left and above: Car powered by springs (Macchina a balestre)  
LV 12 Codice Atlanticus F.812r



## ARTWORK (Reproductions) - Theme 5

As a child Leonardo da Vinci showed precocious genius in math, music and art.

His greatest desire was to be apprenticed to a painter, a profession which was looked down upon at the time.

Eventually, his father was worn down by the boy's undeniable talent, and took him to Florence to study painting, sculpting and engineering under the great Andrea del Verrocchio.

Leonardo quickly outstripped his master (though he continued to study with Verrocchio until around 1476) and was admitted to the Florence painters' guild in 1472.

Only 15 paintings directly attributed to Leonardo da Vinci survive. There are others that remain contentious, or those that are actually lost.

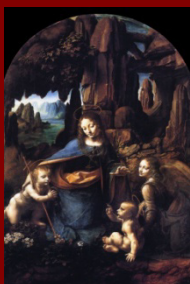
The known masterpieces of Leonardo da Vinci have been reproduced for this Exhibition, including the most famous and most valued of all, the Mona Lisa. The Exhibition reveals the findings of recent scientific research including x-ray analyses, adding to the mystic of the painting that each year, six million people visit the Louvre in Paris, to view.



Virgin and Child with  
St Anne c. 1502-1513



Portrait of a Musician  
c. 1485



The Virgin of the Rocks  
c. 1495-1499/1506-1508



Portrait of Cecilia  
Gallerani c. 1489-90



Portrait of Lisa del Giocondo (Mona Lisa) oil on poplar 77 x 53cm c. 1503-



Annunciation c. 1473-1475(?)



The Last Supper c. 1495-1497

## EDUCATION PROGRAM

The world class, **DA VINCI MACHINES EXHIBITION**, in collaboration with the Leonardo Da Vinci Museum in Florence, explores how through the power of observation and experimentation Leonardo da Vinci made extraordinary advances in every discipline in which he worked: he was an inventor, mathematician, artist, anatomist, scientist, architect, engineer and musician.

The exhibition demonstrates Leonardo's approach and understanding of the basic physical principles behind everything that happens. It provides Schools and Teachers with the opportunity to bring the Italian Renaissance, art, lifestyle, culture, science and history into the classroom.



### DA VINCI MACHINES EXHIBITION

Website for updates and contact details  
[www.romanmachines.com/davincimachines](http://www.romanmachines.com/davincimachines)

Presenting in excess of 60 interactive machines based on the original da Vinci drawings. Featuring his amazing flying machines, nautical and hydraulic inventions, architectural innovations, groundbreaking applications of civil engineering and incredible war machines. There 15 reproductions of his most famous artworks including *The Mona Lisa*, giant art panels, computer animations, film screenings and rare copies of the Leonardo da Vinci Codices

Providing a variety of subjects for teachers to integrate into classroom programs, such as science, physics, engineering, history, mechanics, mathematics, culture and art.

## TEACHER RESOURCES

Education Resources which include ideas and formats for experimenting and integrating the Exhibition themes and content into classroom programs are available, providing a valuable teaching tool for all schools bookings excursions.

Suitable for all school levels through to University, offering the potential for students to achieve a number of Outcomes in their own state's Curriculum and Assessment Framework - Primary, Secondary and Tertiary Studies.

### Primary Levels:

Art (Exploring and responding), History (Historical knowledge and understandings, Historical reasoning and interpretation), Design, Creativity and Technology (Analysing and evaluating), LOTE (Intercultural knowledge and language awareness), Science (Science knowledge and understanding, Science at work) Thinking Processes (Inquiry, Reflection, Evaluation).

### Secondary Levels:

Art (Exploring and responding), History (Historical knowledge and understandings, Historical reasoning and interpretation), Physics, Italian, Design, Creativity and Technology (Analysing and evaluating), LOTE (Intercultural knowledge and language awareness), Science (Science knowledge and understanding, Science at work) Thinking Processes (Inquiry, Reflection, Evaluation), Visual Communication and Design (Exploring and responding).

### Various Studies:

Art (Unit 1: Art and meaning, Unit 2: Art and culture, Unit 3: Interpreting art, Unit 4: Discussing and debating art), Physics, Design and Technology, Italian History, Systems Engineering, Studio Arts (Unit 1: Interpretation of art ideas and use of materials and techniques, Unit 2: Ideas and styles in artworks, Unit 3: Professional art practices and styles, Unit 4: Art industry contexts), Visual Communication and Design (Unit 2: Communication in context).

### Tertiary studies:

Art, Art-History, Cultural Studies, Design, Engineering, Graphic Design, History, Science, Physics, Technology and Woodcraft.





Luigi Rizzo and Gabriele Niccolai



Teknoart SRL workshop, Florence, Italy



Carlo Niccolai, Professor Carlo Pedretti, Gabriele Niccolai

**\*Carlo Pedretti Dr. Lt. 1928**

*Emeritus Professor Leonardo Studies UCLA (USA).*

\*Advisor to the Italian Government on matters Da Vinci. In addition, adviser to Queen Elizabeth II, British Library, King of Sweden, Bill Gates and the Niccolai family on matters Da Vinci. Author of over 40 books, recipient of Italian Government Gold Medal for Services to Culture and a Congressional Citation by United States of America Government, both awarded 1972.

## THE TEAM

In 1995 the Niccolai firm of father and sons, in co-operation with noted academics and working in close collaboration with *Professor Carlo Pedretti\**, enriched the study of Leonardo Da Vinci's mechanics by creating a series of interactive models using materials from the time such as wood, cotton, brass, iron and cord and presented each exhibit with a replica code page of the recently re-discovered Codex Madrid, from which its design was taken.

In 2001 the Italian Government recognised the high quality and skill achieved by the Niccolai family by conferring upon them the special award "Italia che Lavora" (Italy at Work).

Over the past fifteen years *Leonardo da Vinci Machines Exhibitions* have been organised in Florence, Siena, Venice, Naples, Palermo, Warsaw, Madrid, Hong Kong, Dubai, Melbourne, Sydney, Perth, Adelaide, Brisbane, Wellington, Auckland, Taipei, Vienna, Berlin, Helsinki, Chicago, Seattle, Sacramento, Huston, Detroit, Seoul and Hong Kong. All have been endorsed by scholars and have received official patronage by the hosting municipal councils and have featured in TV and documentaries and even in Hollywood movies:

- *Da Vinci: Unlocking the Genius*, Discovery HD Channel (Canada)
- *Da Vinci*, Documentary by Japanese Channel NHK
- *Bridge to Terabithia*, Walt Disney Film
- *The Bike Build*, A Living History Documentary, Beca NZ
- *Da Vinci "Anatomy To Robots"*, ABC 7.30 Report

In 2005 the Niccolai-Teknoart Group expanded with new partners, Mirko Marina (Architect) for animations, Antonio De Vito (Artist), CreaFx (Special Effects), Sara Taglilagamba (Historian) and Luigi Rizzo (Physicist for Science/Education) and undertook new projects.

In 2009-2010 the new Exhibition *Da Vinci Secrets "Anatomy to Robots"* was staged in Melbourne, Sydney and Seoul making headlines for its 15<sup>th</sup> century 'working robots' – never seen before. The discoveries are the subject of a new book titled *Leonardo da Vinci: Automations and Robotics*, CB Editions.

In 2009-2010 the new Exhibition *Machina – Technologia Dell'Antica Roma* staged at the Museo Della Civiltà Romana, Rome, was awarded the 'Gold Medal' of the President of the Italian Republic. It has also featured in TV documentaries in Italy and international magazines such as *Focus*, *Newton*, *National Geographic* and *Scientific American*.

In 2011 a new Exhibition is to be launched by Niccolai-Teknoart SNC (Firenze) Artisans of Florence Pty Ltd.

### **JULIUS CAESAR EXHIBITION MILITARY GENIUS and MIGHTY MACHINES**

Journey back in time, re-live history and discover the life, the culture, the determination and the genius that carved the great  
**ROMAN EMPIRE 52BC – 476AD**

# EXHIBITION STORYLINE

## Introduction

Movie, scenes of beautiful Florence, time-line displays and rare codices set the mood for a most amazing journey and storyline... visitors enter the period and the surrounds where Leonardo da Vinci begun his working life thus helping to create the Renaissance of Mankind.

Western society was still a backward and ignorant culture when with the fall of Constantinople in 1452 - accelerating the influx of Greek scholars with their bundles of manuscripts of stored up wisdom on Greek science, philosophy and technology; the emergence of Arabic science; the philanthropy and policies of the Florentine lords - the Medici... all major influences, and the best example of multi ethnic collaboration, merged into Florence.

People of the East meeting people of the West. A convergence and exploitation of **classical knowledge with new knowledge to new problems with new solutions**. All combining with the vigor and energy of a new society and an economic climate in which ideas flourished and **the modern revolution began**.

Leonardo filled dozens of notebooks, large and small (Manuscripts & Codices) with his thoughts and drawings, recording half a century of reflections, projects and experiments across a vast spectrum of the arts, technology and science. Even though over the centuries less than one-third of these writings have survived those that have come down to us - the surviving manuscripts, provide powerful evidence of Leonardo's far-reaching activities and his bold investigations. **They form the largest and the most outstanding documentary corpus for the studying of the history of art and above all, of the science and the technology of the Renaissance.**



Navigate his many crafts, witness the inspiration he gained from sea creatures which enabled him to become the **greatest "Biomimeticist"** in the world and a **Hydraulics Machine Engineer**.

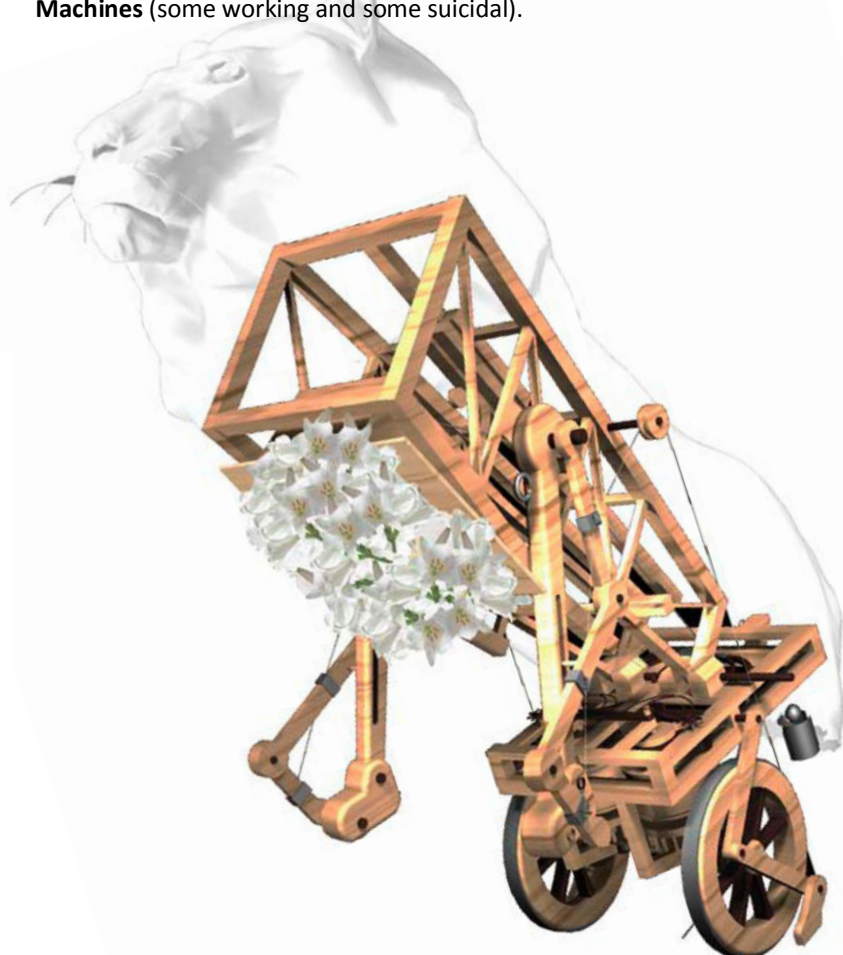
Become a physicist/engineer and operate the revolutionary **Civil Machines** Leonardo had thought of to build his Ideal City... **but above all...**

Enjoy the **Paintings and the Theatrical Machines** that Messier da Vinci, the Court Artista & Intrattenitore, actually built for the enjoyment of Dukes and Kings, and now for the fun of children and adults of all humanity.

## THUS THE VISITOR ENTERS THE INCREDIBLE WORLD OF THE GREATEST GENIUS OF ALL TIME

Leonardo's dreaming of incredible **War Machines**, which thanks to the dedicated work of the Artisans of Florence, confirmed by academics and engineers, finally can be seen in action.

Relive Leonardo's dream of giving man flight, by testing theoretically and practically the many prototypes of **Flying Machines** (some working and some suicidal).





# EXHIBITION OVERVIEW

## AIM

To review and reinterpret Leonardo's iconic inventions and his scientific foresight and compare it with the latest scientific methodology and thinking. This updated exhibition is designed to enlighten 21st century visitors of the magnitude of a 15th century man's vision, genius and achievement in our modern world of science, technology and art, and to make Leonardo's work even more relevant in today's society.

**DA VINCI MACHINES EXHIBITION** was conceived to create an enjoyable platform upon which the vision and genius of Leonardo da Vinci could be presented to reveal the connection between his studies in Art and Nature to the wonders of Machines, not only for the present world of mechanical achievements but also pointing to futuristic scenarios.

## PLANNING EXHIBITIONS

The ongoing research, development and construction program of da Vinci Machines is an important process that has been the key in the success of the Niccolai-Teknoart SNC Group. To date, over 150 machines have been constructed from the 14,000 (approximate) drawings by Leonardo.

The 'Mini Catalogue' of exhibits (refer Page 22) is a representation of the quality and quantity of machines available within the four Exhibition Themes. It is possible to tailor a final Exhibit List to suit requirements/budget and will be discussed with exhibitors upon request.

*Niccolai-Teknoart SNC has the technology and expertise the work with Exhibitors to fulfil specific requirements and even 'custom-make' new machines. Previous Exhibitions have included 'LIVE' demonstrations/constructions during the Exhibition with the new machine remaining onsite with the Museum and/or Sponsor.*

## THEMES

Following introductory panels on 'Florence' and important 'Time-Line Events' and a display of Leonardo's manuscripts (Codices), the Exhibition is presented in five Themes:

<b>Theme 1:</b>	War Machines
<b>Theme 2:</b>	Flying Machines
<b>Theme 3:</b>	Nautical & Hydraulic
<b>Theme 4:</b>	Principles of Mechanics
<b>Theme 5:</b>	Artwork (Reproductions)

**KEY FEATURES – in excess of 60 Exhibits (Presented below is the 'basic package' which can be extended or reduced to suit requirements and budgets of venues).**

<b>10 War Machines</b>	War machines and weapons based on drawings sketched by Leonardo primarily to impress his lord and master Duke Ludovico il Moro, best viewed in conjunction with the 3D animations
<b>10 Flying Machines</b>	Working models recreated in the Florentine workshops of the NICCOLAI-TEKNOART™ using only materials of the time and adhering meticulously to Leonardo's notes and drawings, showing how he developed his many prototypes from fantasy to successful flying machines
<b>10 Nautical &amp; Hydraulic Machines</b>	Machines by Leonardo to tame and utilize water as a source of energy, as a means of navigation and as inspiration to many inventions. (The process scientists now call Biomimetics')
<b>30 Principles of Mechanics</b>	<u>Interactive</u> machines included are i) 20 studies of cranes and mechanical devices to reduce frictional forces, to enhance mechanical advantage and to improve safety for users and ii) at least 10 examples of optical applications and other general scientific considerations

## EXHIBITION OVERVIEW

<b>60 Stands</b>	To hold informative label for each exhibit
<b>40 Virtual Animations</b>	3D animations divided into 4 themes and suitable for touch-screen, demonstrating how each machine works
<b>3 Rare Copies of Codices</b>	Valuable, leather bound manuscripts
<b>1 Showcase</b>	Codice display
<b>1 DVD</b>	'Leonardo da Vinci Genius' 55 minute movie with screening permission
<b>Bases and Plinths</b>	Every exhibit, except those 'free-standing', come supplied with own base

### ACCESSORIES (Optional)

<b>10 Wall Dividers</b>	Panel dividers built by the Teknoart artisans using the same material used in Leonardo's days – designed to highlight the machines
<b>4 Large Theme Headers</b>	Carved in timber
<b>4 Video Players</b>	To screen computer animations
<b>2 Showcases</b>	Glass showcases specifically designed to display models and codices
<b>60 Labels</b>	A4 printed colour label for display and/or digital file for thematic wall text (English only)
<b>1 DVD</b>	Promotional video of artisans at work constructing the 'Da Vinci Bike'

### MERCHANDISE

<b>Gift shop items</b>	We supply 'Da Vinci' merchandise as part of the exhibition on a consignment basis at no extra cost. Each Venue has full rights to choose what they want to sell and pays only the wholesale cost of items sold. We enclose an indicative list, (included in the 'Mini Catalogue') outlining around 25% of the full list which will be provided prior to the commencement of the exhibition.
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### VISITOR HIGHLIGHTS

- Witnessing the world's first helicopter, tank, scuba diver, car... and discovering Leonardo's real purpose
- To feel and touch and in most cases, operate the reconstructed machines themselves
- Discovering the connection between Leonardo's passion with nature, his technical inventions and his art
- Learning how Leonardo protected what he was inventing back in the 15<sup>th</sup> century
- The opportunity to witness in one space, under one roof, all of Leonardo da Vinci's masterpieces.
- Admire critically *Leonardo's* masterpieces and discover how details shed new light and interpretations to his work and technique - *an experience not to be missed for the 'artist at heart'*
- To look upon the *Mona Lisa*, re-presented to the public not just as she looks today in the Louvre in Paris but how Leonardo had intended

### SUITABILITY

The exhibition is highly recommended and suitable for the general public, people of all ages and all levels of education.



## A large, illuminated bat sculpture hangs from the ceiling of a grand hall with classical columns. The bat is white with brown outlines and is illuminated from within, giving it a glowing appearance. It is suspended by a metal frame and hangs in the center of the hall, between two large columns. The hall has a high ceiling with ornate moldings and a series of columns on either side. The lighting is warm and focused on the bat sculpture.

A collage from various exhibitions staged all around the world.

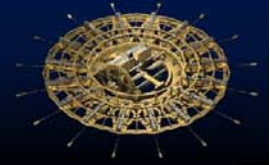
A collage from various exhibitions staged all around the world.

## A large, detailed model of a wooden sailing ship is displayed in a large, dark, circular tank. The ship is suspended by ropes and has a complex rigging system. The tank is surrounded by a metal railing, and the background shows a museum setting with other exhibits.

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## OUR EXHIBITION PORTFOLIO



ARTISANS OF FLORENCE INTERNATIONAL, recognised and awarded for producing high quality exhibitions that are innovative, interactive, educational and have great appeal for audiences of all ages.



## A GLIMPSE OF OUR FUTURE EXHIBITION

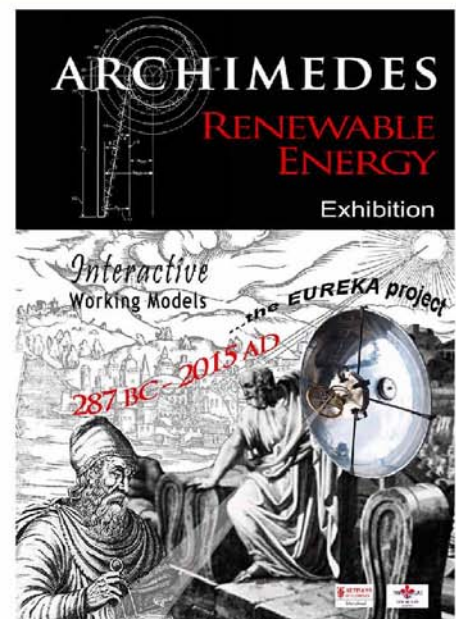
A **BRAND NEW EXHIBITION** currently under development, scheduled to launch in 2015. Over 50 experimental, **interactive** models of **RENEWABLE ENERGY**, based on the principles and inventions in the time of **ARCHIMEDES (287 BC)** and interpreted with today's technology and materials.

Featuring

"THE **EUREKA PROJECT**"

INTERACTIVE

Exploring solar energy 'enhanced by parabolic mirror technology' and mechanical advantage principles applied to modern day needs and applications.







Niccolai-Teknoart™, the Producers of the **DA VINCI MACHINES EXHIBITION** recognise the important role played by participating companies and organisations.

## SPONSORSHIP LEVELS AVAILABLE

“Naming Rights Sponsor”

“Gold Sponsor”

“Silver Sponsor”

“Bronze Sponsors”

At the various levels of sponsorship, rewarding benefits such as these listed below are offered and can be customised to meet specific Sponsor and Partner requirements:

- Exhibition Naming Rights
- Guaranteed Industry Exclusivity
- Speaking Opportunity at Official Opening
- Brand Awareness on all marketing and promotional collateral including television, radio, printed media, flags, banners, flyers and official website
- High Profile Exposure for your brand
- Brand inclusion on the Official Exhibition Catalogue
- Brand Display within the Exhibition Foyer
- VIP Invitations to Official Events
- VIP Tickets for Guests and Clients

Further Details:

Sponsorship Coordinator  
E xtrarizzo@yahoo.com.au

## SPONSORSHIP PROPOSAL

One of the ‘Key Elements’ behind a successful Exhibition is the valued support and contribution received from the Exhibition’s Corporate/Official Sponsors and Partners.

Becoming a “Cash” or “In Kind” Sponsor or Partner of this World Class Exhibition will secure many months of prime time advertising, promotion and brand awareness, whilst developing a rewarding and exciting association with one of the most remarkable Exhibitions to have ever been produced.

In acknowledging the importance of and gratitude for this special role taken on board, the Producers have designed attractive sponsorship and partnership benefits that can be tailored to suit the requirements of each participating company or organisation.

**Notable Sponsors and Partners of previous Exhibitions include:**



Melbourne 2006



Melbourne 2006



Sydney 2007



Palm Springs CA 2006



Melbourne 2006



Tasmania 2005



Auckland 2005  
New Zealand National Tour 2007



Nelson 2007  
New Zealand

## FURTHER INFORMATION

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**COME FLY WITH ME:**  
Luigi Rizzo with the  
model of a Leonardo  
da Vinci flying  
machine.

Picture: GRANT NOWELL

# Genius of da Vinci brought to life

**TIM LLOYD**

AIRCRAFT, tanks, pumps, lifts and robots – many of Leonardo da Vinci's revolutionary designs have been brought to life in an exhibition opening at the South Australian Museum today.

The exhibition lets visitors get their hands on Leonardo's 500-year-old designs.

Working models of more than 40 machines have been created from his original drawings. An

Australian-Italian with a master's degree in physics, Luigi Rizzo, is responsible for bringing the machines to Adelaide.

"After 10 years of teaching physics in Melbourne I needed a break," he said.

"I went to live in Florence but when I bumped into an exhibition of the machines I said, 'I have to take it back to Australia'."

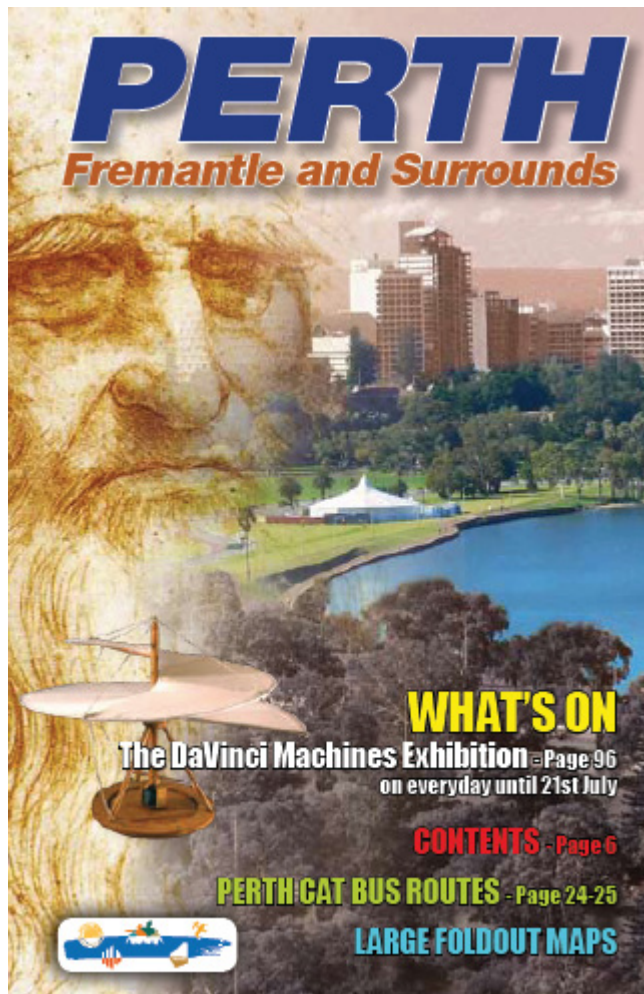
Mr Rizzo discovered that the Niccolai family, artisans in Florence, had turned from making

leather goods and jewellery to creating the machines of Leonardo using materials of his era.

"I was adopted by the family and the artisans and they trained me as a pseudo-artisan," he said.

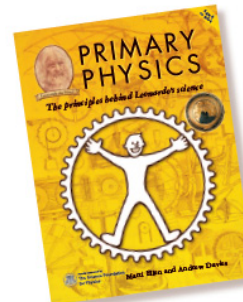
The Niccolai family had intended to establish a hands-on museum in Florence for children to learn about Leonardo, but they found 70 per cent of the audience was adult. The machines appeal to men, while women are more drawn to Leonardo's drawings.





## PRIMARY PHYSICS

*The principles behind Leonardo's science*



Winner of the prestigious Moonbeam Children's Book Award in the Activity Book category. Presented by Jenkins Group and Independent Publisher Online, the Moonbeam Children's Book Awards are designed to bring increased recognition to exemplary children's books published in North America and their creators, and to support childhood literacy and life-long reading. *Primary Physics - The principles behind Leonardo's science* is presented by special arrangement with the Da Vinci Machines exhibition.



Da Vinci Machines exhibitor Tom Rizzo (centre) with authors Marti Ellen and Andrew Davies

## Da Vinci exhibition takes flight

Kim O'Connor

More than 500 years ago, Leonardo da Vinci was designing flying machines, war machines and even breathing apparatuses for divers.

Now, Sydneysiders have a chance to see 60 models created by Florentine artisans inspired by da Vinci's drawings and descriptions.

Curator Luigi Rizzo moved from Australia to Italy five years ago to fulfil a lifelong dream. He happened to bump into the da Vinci exhibition while visiting Florence and was hooked.

As a physicist, the appeal was irresistible. "The moment I saw the machines, I thought they had to travel. It took me two years to convince the experts I could do it," he said.

"We are in Australia now, will head to New Zealand and then back to America."

Mr Rizzo said that despite the passage of centuries, the da Vinci exhibition has universal appeal to everyone from preschoolers to seniors.

"It captivates everyone from academics to school kids, engineers, petrol heads, art lovers and gesto-



Curator Luigi Rizzo with his son, exhibition co-ordinator, Thomas Rizzo. Photo: Melanie Russell

gists. Leonardo was someone who contributed in all fields, but he was not recognised as a genius in his lifetime," Mr Rizzo said.

"In Florence he was a little bit of an outcast. As an artist, he was competing against Michelangelo and Botticelli, and they delivered on time

and he never did. In fact, he was always challenging the guidelines and pushing the envelope."

Da Vinci left Florence for Milan

where he stayed for almost 20 years. It was here he presented the ruler, Ludovico the Moor, with a series of military engineering designs: a tank, boat with scythe, covered cart for attacking fortress walls, and a method of climbing fortress walls.

Mr Rizzo's son, Thomas, worked with the Florentine artisans on some of the scale-model creations.

"I was overwhelmed to be part of such a great experience. I'm a history major so to be creating history with these was amazing. The works have been made by two generations of the Niccolai family in Florence," Thomas said.

"The most important aspect of Leonardo's character for me is that he never gave up. He failed so many times, but he just continued until he got it right or found that it simply would not work."

The "Leonardo da Vinci Machines Exhibition" is open daily in the Showroom at the Entertainment Quarter, Moore Park until July 1.

Details: [www.eggscorepark.com.au](http://www.eggscorepark.com.au) or tickets at the door.



# DA VINCI GENIUS

This special edition of *Da Vinci Genius* has been created for *The Leonardo da Vinci Machines* exhibition to enhance the experience of guests worldwide. The internationally acclaimed exhibition is proudly brought to you by the award winning *Artisans of Florence - Teknoart*. The creators of the *Leonardo da Vinci Museum, Firenze, Italy*.

The story of the brilliant Italian artist, sculptor, architect and engineer is told in this new DVD. Leonardo's legacy to the world came in so many forms; in the breathtaking beauty of *The Last Supper* and *The Mona Lisa*; his rich collection of drawing; the mirror-written notebooks containing original thoughts on astronomy, biology and physiology.

## THIS PROGRAMME FEATURES

- Terrific 3D graphics to explain and 'test' Leonardo's theories and designs.
- Outstanding computer animated reconstructions
- Rare period imagery
- Comment, analysis and interpretation by Dr Alan Cartwright, School of Engineering University of Warwick, Dr Peter Borchers, School of Physics and Astronomy University of Birmingham and Dr. Martin Kemp, Trinity College Oxford

## SCENE SELECTION

- Mona Lisa • The Duke Of Milan • Perfect Truth
- A Violent Age • Mechanical Science



▲ The Mona Lisa



▲ Superb 3D animation



▲ Superb 3D animation

Images on the packaging do not necessarily appear in the programme. Programme contains colour material.

Main feature length: 50 minute approx.

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## High hopes for Da Vinci windfall

By Tom Hunt

Close to \$1 million could flow into the Nelson economy as a result of the *Da Vinci Machines* exhibition, which opens at the Nelson Provincial Museum tomorrow.



MAIL PHOTO / COLIN SMITH 173915c

**IMAGINE-AIRY:** Da Vinci Machines exhibition manager Luigi Rizzo adjusts a flying machine.



## DA VINCI SECRETS MACHINES EXHIBITION

