- octoorfy the A an arrive and share of the Stright readed r philiplif an a field a phil erstheigt : stall line ALC: NOT THE -Inina na pariptan y direfylet v minist ywelfar (* 1984) ande panel i wilfer gin artwelfar antifert (* 201 ande menant y special for 2 minister antifert (* 201 alde menant y special for 2 minister antifert (* 1984) and the second s

भा देखी समाधिती के साथ करती साम्राज्य होतात है जिस्ता निर्वत स्थाप स्थाप १९४१ - इसाम प्रेर्ड के प्राप्त के साथ के साथ के साथ के स्थाप के साथ के साथ साथ की साथ करती के साथ का स्थाप के साथ की साथ के स्थाप के साथ के के मुद्दी के साथ करता के साथ का सीचार के साथ की साथ की स्थापकी

And a Comment Space of a simply second of a service of the state of Comment Space of a simply second of a service of the space space of the space of the space of the space of the space and g any space of the space of the space of the space and g any space of the of example 300 and the second second biller to be BARY BELLARD the strate on our step









(c) Keith Devlin, 2013

PRELUDE

A memorial

October 5, 2011, 4:47 pm



Email received on my iPhone, Oct 5, 2011, 4:47 pm



Apple Store, Palo Alto, Oct 6, 2011, 7:30 am



Apple Store, Palo Alto, Oct 6, 2011, 7:30 am

Apple Store, Palo Alto, Oct 7, 2011



Apple Store, Palo Alto, Oct 6, 2011, 7:30 am

Apple Store, Palo Alto, Oct 7, 2011



Steve Jobs' house, Waverley Street, Palo Alto, Oct 8, 2011

The First Personal Computing Revolution

The young man could hardly contain his excitement. He was sure the invention he had just seen could change the world. It would usher in a new era of personal computing. No longer would a businessman or trader have to rely on a member of the select brotherhood of computing professionals to crunch the numbers. He could do it himself.

The people who showed him the invention were fascinated by how it worked, but they clearly did not see what the young man could: its huge commercial potential. As so often happens in history, the right person was in the right place at the right time. Not only had the young man shown mathematical talent at an early age, he had grown up in what was then the acknowledged world capital for innovation, particularly in the business world. He also had the savvy to know how to make the invention available to ordinary citizens. The trick was to package and market it to them directly, in a way that they could at once appreciate and understand.

Within a few years, the young man had succeeded beyond all expectations – save perhaps for his own far-sighted vision. The personal computing revolution was underway, new businesses were being created, new ways of carrying out international trade and commerce were developing, new financial institutions were being established, and new fortunes were being made. The world would never be the same again.

The young man could hardly contain his excitement. He was sure the invention he had just seen could change the world. It would usher in a new era of personal computing. No longer would a businessman or trader have to rely on a member of the select brotherhood of computing professionals to crunch the numbers. He could do it himself.

The people who showed him the invention were fascinated by how it worked, but they clearly did not see what the young man could: its huge commercial potential. As so often happens in history, the right person was in the right place at the right time. Not only had the young man shown mathematical talent at an early age, he had grown up in what was then the acknowledged world capital for innovation, particularly in the business world. He also had the savvy to know how to make the invention available to ordinary citizens. The trick was to package and market it to them directly, in a way that they could at once appreciate and understand.

Within a few years, the young man had succeeded beyond all expectations – save perhaps for his own far-sighted vision. The personal computing revolution was underway, new businesses were being created, new ways of carrying out international trade and commerce were developing, new financial institutions were being established, and new fortunes were being made. The world would never be the same again.

Who, When, and Where?

The young man could hardly contain his excitement. He was sure the invention he had just seen could change the world. It would usher in a new era of personal computing. No longer would a businessman or trader have to rely on a member of the select brotherhood of computing professionals to crunch the numbers. He could do it himself.

The people who showed him the invention were fascinated by how it worked, but they clearly did not see what the young man could: its huge commercial potential. As so often happens in history, the right person was in the right place at the right time. Not only had the young man shown mathematical talent at an early age, he had grown up in what was then the acknowledged world capital for innovation, particularly in the business world. He also had the savvy to know how to make the invention available to ordinary citizens. The trick was to package and market it to them directly, in a way that they could at once appreciate and understand.

Within a few years, the young man had succeeded beyond all expectations – save perhaps for his own far-sighted vision. The personal computing revolution was underway, new businesses were being created, new ways of carrying out international trade and commerce were developing, new financial institutions were being established, and new fortunes were being made. The world would never be the same again.







Silicon Valley, 1979-1984

The young man could hardly contain his excitement. He was sure the invention he had just seen could change the world. It would usher in a new era of personal computing. No longer would a businessman or trader have to rely on a member of the select brotherhood of computing professionals to crunch the numbers. He could do it himself.

The people who showed him the invention were fascinated by how it worked, but they clearly did not see what the young man could: its huge commercial potential. As so often happens in history, the right person was in the right place at the right time. Not only had the young man shown mathematical talent at an early age, he had grown up in what was then the acknowledged world capital for innovation, particularly in the business world. He also had the savvy to know how to make the invention available to ordinary citizens. The trick was to package and market it to them directly, in a way that they could at once appreciate and understand.

Within a few years, the young man had succeeded beyond all expectations – save perhaps for his own far-sighted vision. The personal computing revolution was underway, new businesses were being created, new ways of carrying out international trade and commerce were developing, new financial institutions were being established, and new fortunes were being made. The world would never be the same again.



Who, When, and Where?

auf a statel gam ut bie etter er mit : ter b at simme bi ber at min fr 1'ar to far ai beten salen it pot to fid igti pundiat went ans aler put ? ? fayer querat quani adent brans & + 1 bebra au & i stobet gim amthet o ghui ugli er 121 of frmibat - ghui neli er z ane mil bil g 1 e by ar sundef gue om dem mochar p. er g. enter rappel entent there of the siz and de ertern. ft des utor plart 7 2 gerquern quien uten eine if erbraches towe and the further of the second back for and the lique faarfuna ana in bar an wichen beaches ; paromer ane ur betion. er or and 11 er beschult to faart besas mitter besass to y greefin. an fub bramit i' ernillen a t 7 t to o fer brundet t + enter ?. Par be citta umme, urman elementer. ft eins umue que i palmi g nient plot 11 eronit g we Eler & nerg en quini uden pami te wiebet gam ur be cheon er millet 2 2 11 our tie erabile er buiter 19 enbur fer 2 12 2 De cina puine s fauf as or blauter dina mi me oner di totter fuit ader saim. ins palat fr patres & siter plat it to Ler dent quan uden palares ? orther quettoren ar miller \$ \$1 pte to E et ounsel pg ordinutie a mapur igle sunfielt is que tout mans wenn e fime etub tort. C. 162 Sub- to a colour tal 30.PY \$7 - rind que quer 68 udurit que ane prer autour mete il prist us cher utm ubigra al ana uster fel 17' palm uster or 17' eiten fe febila 1877 IN POINT LL De cina Balac APPENDA L-Y anna fialte al lignato f plant A utor porrat 19 er querar da WWW 7 27 fuleit pilmi z miche gien ur bu effer et milet e giger aganis 三日 of pa coour carent & fullant que patent a fut querta part uni ante As plant a same quera w parent 19 entra unen ? " ur porant. web and and and grannal ET a gut The Symmit to 2 mg Ter galmindan point terfilet gitn er milde ter tormorf finil 2 & conit an the far to right to ? I' de ann. 13.86 mi + + ber fanet & verter som fie er nit z4 plaiden er tojera pastiert ten 101 DE TH Ser qualant ruque perior à finna stutter à ficturent une har the number ber to fit and manut us freit to in with many the unit based on hourses and the second of 13 le a FI 30 32 4 Wommer 2 1 8 co colour tary 500 Cr Thansi 21'E

Pisa, Italy, 1190-1230

The young man could hardly contain his excitement. He was sure the invention he had just seen could change the world. It would usher in a new era of personal computing. No longer would a businessman or trader have to rely on a member of the select brotherhood of computing professionals to crunch the numbers. He could do it himself.

The people who showed him the invention were fascinated by how it worked, but they clearly did not see what the young man could: its huge commercial potential. As so often happens in history, the right person was in the right place at the right time. Not only had the young man shown mathematical talent at an early age, he had grown up in what was then the acknowledged world capital for innovation, particularly in the business world. He also had the savvy to know how to make the invention available to ordinary citizens. The trick was to package and market it to them directly, in a way that they could at once appreciate and understand.

Within a few years, the young man had succeeded beyond all expectations – save perhaps for his own far-sighted vision. The personal computing revolution was underway, new businesses were being created, new ways of carrying out international trade and commerce were developing, new financial institutions were being established, and new fortunes were being made. The world would never be the same again.



Who, When, and Where?

and a stelet dann mentessen ur mit a tim a ur sinne bi per up

mis fp fag co for ai when shew to pot to fishigh randont

הוא יין לאמים גד ין אימונותים לפאידי ב פפוולר עו ע

went ans aler pat ? ? for querar quini adent bransh + 1 Sebra Locker am anther o philight of 121 of milet + phil ali erz 7 que mil ba gi ely er sun feomoem.mochar pri er p. leon be citta Latine arou plot 11 erona 3 we flot & nera er ens unte que i point o petitiet arem ur bue eftion er mil bet 2 - 11 poten ubegra al aten unter fel 14' paten unter or 14' eli tente ebbedal IN POINT LL De cina Balse anna fielte an lignato F plans & uton porrat 19 er quent an P22727 usleit pilmi z. offer gen ur bie effer er milef c gigef anganis of pa coour carent & fullant que patent a fut querta part uni ante As plinet a serie querta se person 1.9 ester untre ? rur porent. weti est das uter prantal Et er gint y we i yearant tot 2 mg ter guini uslan potent & terfelet gan er millet ter Zerer annief find 2 & entrit at 1 5 bis the fait to refine 1 5 1' de com. intu ert ver 101 petru

in east din uiten permit for 29 er genter som utere ome of er pil mi - 9 ser e cine - 2000'er gent fe er uit z 4 plus igti er 10 (27) 10 orthur 101 2200 er 2100 goune 21 er proper, toe e p 90 spillent in que permat à faint souther d'é feitermin uiterber fais - 29 ortent baie za magne ugle pri gua que s'erfait uiter fais - 29 ortent baie za magne ugle pri gua que s'erfait uiter fais - 29 ortent baie za magne ugle pri gua que s'erfait uiter fais - 29 ortent baie za magne ugle pri gua que s'erfait auter for a planent en est baber menore si planent er uit ef 2100 22 4 eremue 2 - 200 entent tit - 200 entent ere

Pisa, Italy, 1190-1230

12 liber

The young man could hardly contain his excitement. He was sure the invention he had just seen could change the world. It would usher in a new era of personal computing. No longer would a businessman or trader have to rely on a member of the select brotherhood of computing professionals to crunch the numbers. He could do it himself.

The people who showed him the invention were fascinated by how it worked, but they clearly did not see what the young man could: its huge commercial potential. As so often happens in history, the right person was in the right place at the right time. Not only had the young man shown mathematical talent at an early age, he had grown up in what was then the acknowledged world capital for innovation, particularly in the business world. He also had the savvy to know how to make the invention available to ordinary citizens. The trick was to package and market it to them directly, in a way that they could at once appreciate and understand.

Within a few years, the young man had succeeded beyond all expectations – save perhaps for his own far-sighted vision. The personal computing revolution was underway, new businesses were being created, new ways of carrying out international trade and commerce were developing, new financial institutions were being established, and new fortunes were being made. The world would never be the same again.



Who, When, and Where?



Pisa, Italy, 1190-1230

















The comparison.







Lived from around 1170 to around 1250; spent most of his life in Pisa. Father an international businessman.



Lived from around 1170 to around 1250; spent most of his life in Pisa. Father an international businessman.
 Traveled to Bugia, in North Africa, as a teenager to join his father.



Lived from around 1170 to around 1250; spent most of his life in Pisa. Father an international businessman.

Traveled to Bugia, in North Africa, as a teenager to join his father.
 Observed Muslim traders using a remarkable method for performing calculations. (The one we use today.)



- Lived from around 1170 to around 1250; spent most of his life in Pisa. Father an international businessman.
- Traveled to Bugia, in North Africa, as a teenager to join his father.
 Observed Muslim traders using a remarkable method for
 - performing calculations. (The one we use today.)
- That system had been developed in India in the first seven centuries of the first Millennium, and had been learned, used, and carried northwards by Arabic speaking traders who traveled back and forth along the Silk Road. Hence called Hindu-Arabic arithmetic.

- Lived from around 1170 to around 1250; spent most of his life in Pisa. Father an international businessman.
- Traveled to Bugia, in North Africa, as a teenager to join his father.
 Observed Muslim traders using a remarkable method for
 - performing calculations. (The one we use today.)
- That system had been developed in India in the first seven centuries of the first Millennium, and had been learned, used, and carried northwards by Arabic speaking traders who traveled back and forth along the Silk Road. Hence called Hindu-Arabic arithmetic.
- On his return to Pisa, Leonardo wrote a mammoth book describing this remarkable new way to write numbers and calculate with them, called *Liber abbaci* ("Book of Calculation").



- Lived from around 1170 to around 1250; spent most of his life in Pisa. Father an international businessman.
- Traveled to Bugia, in North Africa, as a teenager to join his father.
 Observed Muslim traders using a remarkable method for
 - performing calculations. (The one we use today.)
- That system had been developed in India in the first seven centuries of the first Millennium, and had been learned, used, and carried northwards by Arabic speaking traders who traveled back and forth along the Silk Road. Hence called Hindu-Arabic arithmetic.

On his return to Pisa, Leonardo wrote a mammoth book describing this remarkable new way to write numbers and calculate with them, called *Liber abbaci* ("Book of Calculation").

Completed in 1202, this book is generally credited with bringing the Hindu-Arabic number system and its arithmetic to Europe, and launching the modern, Western-led, commercial world.



Inapit abbacus leonardi de como filion bonaci pitam o poitus: A.O. c c.i. . norer abcoce. A.O. c c. veroin. E Riphtho m one un amagist michael sotte sime philo so phe at the file on and que ouoil composin nob unfarbere vil une oriean sa postul attoi pin filenhori plarata magine aourin bo

"Here begins the Book of Calculation composed by Leonardo Pisano, Family Bonaci, in the year 1202. [...]"

Inapit abbacus leonar de domo filion bonaci pilan o poitus. 2.0). c c. 11. 7 wrept abcooc. 2.0). c c. v v vii. E Riphtho m'one un a magist michael sotte sime philo so poit a librit de mis que ouril composi und trascribere vii une opte au librit de mis que ouril composi und trascribere vii

"Here begins the Book of Calculation composed by Leonardo Pisano, Family Bonaci, in the year 1202. [...]"

According to the tradition of the time, he would have been known as "Leonardo Pisano" ("Leonardo of Pisa").

"Here begins the Book of Calculation composed by Leonardo Pisano, Family Bonaci, in the year 1202. [...]"

According to the tradition of the time, he would have been known as "Leonardo Pisano" ("Leonardo of Pisa").

+ In *Liber abbaci*, he refers to himself as *filius Bonacci* ("son of Bonacci").

"Here begins the Book of Calculation composed by Leonardo

Pisano, Family Bonaci, in the year 1202. [...]"

According to the tradition of the time, he would have been known as "Leonardo Pisano" ("Leonardo of Pisa").

+ In *Liber abbaci*, he refers to himself as *filius Bonacci* ("son of Bonacci").

+ We should perhaps translate the phrase as "of the Bonacci family".

"Here begins the Book of Calculation composed by Leonardo Pisano, Family Bonaci, in the year 1202. [...]"

According to the tradition of the time, he would have been known as "Leonardo Pisano" ("Leonardo of Pisa").

In *Liber abbaci*, he refers to himself as *filius Bonacci* ("son of Bonacci").
We should perhaps translate the phrase as "of the Bonacci family".
The name "Fibonacci" (from *filius Bonacci*) was coined by the historian Guillaume Libri in 1838.

"Here begins the Book of Calculation composed by Leonardo Pisano, Family Bonaci, in the year 1202. [...]"

 According to the tradition of the time, he would have been known as "Leonardo Pisano" ("Leonardo of Pisa").

In Liber abbaci, he refers to himself as filius Bonacci ("son of Bonacci").

We should perhaps translate the phrase as "of the Bonacci family".

The name "Fibonacci" (from *filius Bonacci*) was coined by the historian Guillaume Libri in 1838.

The "Fibonacci sequence" was so named by the French mathematician Edouard Lucas in the 1870s, after Libri coined the nickname Fibonacci.

The Fibonacci sequence

The "Fibonacci sequence", an unending sequence of whole numbers that begins

1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, ...

The rule for generating new numbers in the sequence is that each number is the sum of the two preceding numbers, so 1+1=2, 1+2=3, 2+3=5, etc.

This sequence arises when you solve a particular problem Leonardo gave in *Liber abbaci*:

How Many Pairs of Rabbits Are Created by One Pair in One Year.

A certain man had one pair of rabbits together in a certain enclosed place, and one wishes to know how many are created from the pair in one year when it is the nature of them in a single month to bear another pair, and in the second month those born to bear also.

The numbers of pairs each month are the Fibonacci numbers. You can read off the answer to Leonardo's problem: 377 pairs.

The problem and its solution date back well before Leonardo.



The birth of modern finance (13th Century)

Leonardo's Real Legacy


The birth of modern finance (13th Century) Capodistria - Crer Padua D Lodia di Chicoggia ^D Placenza Banking (banca) + Bobbio LOMBARD Comacchic ADRIATIC SEA Pistoia o Insurance (polizza) NCONA International trading empires Tagliacozzo original duchy of Rome before 756 KINGDOM OF lands donated by Pepin, king of the Franks 756 SIGILY lands acquired 757-74 lands acquired 781-89 nds and towns under effective control Double-entry the papacy 962 inds acquired 1053 tathildine estates o Som bookkeeping (Medicis) ands "recuperated" by Innocent III 1198-1216 or brought under control 1217-78 cognized northern boundary 1201-13 scale 1: 4 000 000 choicesy 100 km moortant monastery 75 m site and date of important battle

Leonardo's real legacy?

William N. Goetzmann, Edwin J. Beinecke Professor of Finance and Management Studies & Director of the International Center for Finance, Yale University:

"The five-hundred-year period following the appearance of *Liber abbaci* saw the development in Europe of virtually all the tools of financial capitalism that we know today: share ownership of limited-liability corporations, long-term government and corporate loans, liquid and active international financial markets, life insurance, life-annuities, mutual funds, derivative securities, and deposit banking. Many of these developments have their roots in contracts that were based on the mathematical analyses Leonardo introduced to Western Europe through *Liber abbaci.*"

In particular, according to Goetzmann, evidence in *Liber abbaci* suggests that Leonardo was the first to develop present-value analysis for comparing the economic value of alternative contractual cash flows. (The present value criterion is now used by virtually all large companies in capital budgeting decision making. The modern present-value formula was developed by economist Irving Fisher in 1930.)

William N. Goetzmann, Fibonacci and the Financial Revolution, in William N Goetzmann and K Geert Rouwenhorst (eds), *Origins of Value: The Financial Innovations that Created Modern Capital Markets*, Oxford University Press, 2005

napit abbacif leonardi de domo filion bonaci pitro is point: 1.0), ec. 11. adrept Abcoce. 1.0). ec. geboin. E Raphthom one un amagift michael forte fime plate foglie intherfi te mili qui entri contoin ass materie vi an hat pofulation pen fidelilors pleratif manging anarin to norë malang mit bege intilazatë porteges - finsus ore reprosë quesa noreftala assess regara figjeflaza reforant intagio plena filim merriti a ekos furka moo innog, que tuodu stupi facenta anti pfantaere elega fr quertine tua moremettrea farrita far coneyo, refaffeigatorio fas armando n' pôr re mil pleta tento farrita el conferent grantes quesa al argumenta far tattta fibre tin upsta mobil mil ogant, que nodul e bijer gemitet phanolle menofinally afiguit grometrior fuit. ven make how our repenses go their ampelia a f agrometi gunet alla pian apuel explana fingli fica rit oplanally gromented and frice. Care but the maget gertheonal from opening whig pail but farmer pantel bei fare networth operat or entine ufa er opferente bastattas mel fint platere o farma pound artfa mbala th memoria controller was apportent distante conguert o quali mie tip alfa sin tine "shanna dag sa san mahar van anan hi funt bilipfe hab mantife storn gratan potert appfirtung bai turnar Bale partier frut factor part sontra builting, swaating, or all fut and beinf later untur pelle leuf matentes, plares fintible ege tegte infinfiaen na ne win this enisme ine bane. Explit plagat frapat cupiti. f agtue nond figunas yning, requisif al a et niet felan. egnen wapatei ten and belong monaily one provide and a diam Of mitty hante mitiging rung: Catomar and April April 100 Centeries manage traip outenetting Tupton fear fers E bunthet untegen wing gentegent. Enslented ing fuing dirupt an O 6 crapted muentorial tra secondari officialia. [light perale mounted. O & insured ern calles a vie energie beitenster region regio filiti O Floorinthe farmi ant confactot O f ablamme meterap any oup regitt queenkam pamet. O & foint mitter winer form quat ersmort apalien. O Cogli elanom quale grin for el creme grut blais. O fonumente raced controlacante carrette a editir as suntito un astante. O fottante qualterin grenneto partient. tum figure suber bes fate: "napir cipitulir pmu. Z1111. Vm. bu. Vr. W. am. and in a 5 8 7 6 9 1 221.

The first page of a copy of the 1228 edition of *Liber abbaci* kept in the Siena Public Library, believed to date from the late 13th Century.

The first edition of *Liber abbaci* has not survived.

napit abbacif Leonardi de domo filion bonaci pitan is point: 1.0), ec. 11. adrept Abcoce. 1.0). de. geboin. E Raphthom one ma amagift michael fonte fame phile fagter inriterit te mili quie entell competiu nel materiterie feil an bat pofinitation opin fidenhors plantis mangine as at in to זמילי תגונוק וווו אמי וויוות אלי מידיקת - וחמון מידיוקינטל קובע חמרולעום אנטוס הקטים לקרוע דירוינטי ויומים פריים לאמי מידיקינטל קובע המרולעום הואל הואס היומים, קוב לעמר לא היוני וווויים אינו לאמנט לי רומים לי קוביונטי tua moremettrea farrita far coneyo, refaffeigatorio fas armando n' pôr re mil pleta tento farrita el conferent grantes quesa al argumenta far tattta fibre tin upsta mooii mil ogant, que todut e bijer gemitet phatolig sternettantil figuil gremetrof fuit. ven mate the offer repente ge their ampelia as f agreement gunet alla plana apael explana fingli fien rit oplanally gromented and frice. Care but the maget gertheonal from openne tong per hul farme pantel bei fur netueti operat del ettano ufa er opferente bastattas mel fint platere o farma pound artfa mbala th memoria crimellar was apportent di manie congur il g quali mie ilig Belin firth for Thimmen Bog Se sons mucht were water under un funt belapfe habenaterie store graten popert appfintene bai turente Bale partier frut factor part sontra builting, swaating, or all fut and beinf later untur pelle leuf matentes, plares fintible ege tegte infinfiaen na m'artin thus minutes wir fidens. Explat plagut frapuit capitis. 6 aguet nonir figuren yntes, reputit ein en nit felat. egnen raputat ten net belate monthly one presidentially alber-Fully sate mingrap tung: Catomarine, Aprilatory,) 6 errante miner take outsnorthy Tupton fear Sera Counted anogue when partagent. Ensitented ing miner derupen anp 0 6 craptel energiene con secondari officialiai. [light pertile erouctioe. O Floorinthe farmi ant confactot O f afannune menerap ang. esp-regfit Q.aoana.mi pamet. O & faint mitter winer form quat ersmon apellen. O Cogli elanom quale grin for el creme grut blais. O fonumente raced controlacante carrette a editir as suntito un astante. O fottante qualterin grenneto partient. num figure suber bes fate: "napir cipitulir pmu. P1111. Vm. bn. br. V. ann. and an

The first page of a copy of the 1228 edition of *Liber abbaci* kept in the Siena Public Library, believed to date from the late 13th Century.

8 7 6 9 1 221.

3

The first edition of *Liber abbaci* has not survived.
 Leonardo completed a second edition in 1228, and several late 13th or early 14th century copies exist.

napit abliacif leonardi de domo filion bonaci pilim a point 2.0), cc. 11. adrept Abcoce. 2.0). cc. gyoin. E Raphithe mone ma amagit michael forte fime phile foplie intiferit er unie quie entril competin nes traffenbere vui an hat postal attor opin fidenhors pleast it mangine an ar in ho המילי הגוונים והו אמי וחיות אלי מידינים. - (חבעו מידיורים לי מוכש חבריות לע גרוונים הקצרה לעברת וחיות וויות מידינים ביותר לאות מרווין לעבר היו לאות הואי אוויזים - קצר הגאלה והואי להרוונים שיון להתנגריי בנסף. לד קב שרוונים tua monemettrea finereta file conevo, refuffeigatorio file a munch in pob re una plena estas batritta el craffriant gravitaria quesa un agreciata fijor tatma fine tin unsta mobil mil gutit, que todat e taje genetet phanelle menotionith afiguit gremetrior fuit. ven mano hors our repeates gro their ampelia as f agreement gunet alla plana apael explana fingli fien rti epieneile grienerner annoficies. Cure bu thi maget fortheored from opented to have no but foreme prand be fore noticetil operat for othere ufu e ovierente bustattas met fint gibnere g farma pound auffa misde th memoria crimellar was apportent di manie congur il g quali mie ilig alfu comelute many over infurnt area of poly normalif when which all funt maple tal martie store gratan pours applement bia farmar bale porture frut faalter puil sontra buil theilig, ginadingt on di fut and beint latter unter polit feuf matenete, plareofistiber ope tegen infactionen. na m'artin thas minmoi me fatans. Explit plagut frapuit capiti. 6 agust none figuren ynten realt al e et niet felat. egnen rapatei ten an priori manuale are pressourced allow. Fullylante integrap tung! Catomic spin. Apertalament. Contained mittap thing outsideting Tupton fear Sera Counted unegrop may portaged. Guilanted ing twee arupent any 6 Allen to manager to to O & crapted energiente tra secondati officialia. [light pertile routied. O & hanarta en maila a the entration beitomater englant regilt falls O Flacing farm ant applacet O f afa mune menerap any esp regfit q seathani punet. O & faith mitter witter form quat er smot appliten. O Cogle elanym quale grin fin et ermae gruet tolale. O fe museus vand vantapaanie anonis a edelie ang suatio op astani. O fe linaie qualterin grenner parient. nem figure yenter ber fare. "netpur capitulir pmu. 71111. Vm. bu. Vr. N. am. an. a. 3 8 7- 6 91221.

The first page of a copy of the 1228 edition of *Liber abbaci* kept in the Siena Public Library, believed to date from the late 13th Century.

- The first edition of *Liber abbaci* has not survived.
 Leonardo completed a second edition in 1228, and several late 13th or early 14th century copies exist.
- He wrote a shorter, simpler account of Hindu-Arabic arithmetic, *Libro di minor guisa* ("Book in a smaller manner") aimed at merchants, which modern historians think was the work most responsible for popularizing the new methods in Europe, but no copies were found.



The first page of a copy of the 1228 edition of *Liber abbaci* kept in the Siena Public Library, believed to date from the late 13th Century.

- The first edition of *Liber abbaci* has not survived.
 Leonardo completed a second edition in 1228, and several late 13th or early 14th century copies exist.
- He wrote a shorter, simpler account of Hindu-Arabic arithmetic, *Libro di minor guisa* ("Book in a smaller manner") aimed at merchants, which modern historians think was the work most responsible for popularizing the new methods in Europe, but no copies were found.

Practica geometriae. (1220) is a geometry textbook.

topit abbaen leonardi de domo filon bonan pilm point 1.0). cc.il. abrest Abcoce. 1.0). cc. gutoin. ERlpfithem me ma amagift michael forte fime plate fo pier inriderfi se mais quie entell competin nes maferibere fon a bit pofulation pin fidellors pleratif magine aburin to המילי העונים יהו לביו וויוו ובאולי המיריקים ביות מיר ווידים לא ביוב או המירובו aceier centra figefina reforant in que piena thin terririt edus finfla mora misa que tuscia stari fuentra avit planateri elam fr querfine nus monenentes factors für ärnene mindere som til for a mundere pob tattta fihre tin unsta mooti mil opunt, que toodut e bijer gemitet planoile monofine with afiguit grometrior full . ven make hor of copenca geo their ampelia as & agreement gund alla plana appel explana fingli fien ri aplanale givenerat somofices lure be ab suga Lotherna forter apanta to man and had been stand be fare notice in on the other ufu voyfermie busterno met fint plutere o facuna pound avets missie tii memoria concellor faar amortonit fiimanio celigarii g quali mo ing uliu manchau mano mané padanan anta sé poli namandaf sené mananias funt maple tal matthe store grant pourst application bout theme bale porture frut factor pull contra bil their swattings out it. (ut and beint later unber polit las mareneto, parentimber op tiger indefart. na m'artin thas retinent and fidens. Explise plagant frapeut capit la f agnad nonib figuran oning route all of nit felat. agnat rapate in in below monship over memousnelle, shoe-Fullyhanse mingrap rung: CANOTTAG SPACE ADATESTADOTT Contacted mittap maip cummeting rupton fear Sera founder untegen wie gemagent. Enstanter ing fuier ebrufent ag ADDER & MANAGE O 6 crapted watersbatter stp. sergates or firmings. fight pertils monetie. 0 6 innarti em milita erte enpruse beitenabe engleta reglit fah O Floorinthe factor and confactot O Cafamune menerap any esp regfit queetidani gunet. O & faitant miltan printer fortil quat er untor applicati. O Cogle elannym quale gyfin fin el erenar grurt felale. O E mun afer raesal arathquamie anvenie arytetie ang eucelier og artaue. O E faute qualterin gennete genieni. nem figure ymber ber fate. napir apitulir pmu. 71111 Vm. bu. W. W. am. an. in a 91221.

The first page of a copy of the 1228 edition of *Liber abbaci* kept in the Siena Public Library, believed to date from the late 13th Century.

- The first edition of *Liber abbaci* has not survived.
 Leonardo completed a second edition in 1228, and several late 13th or early 14th century copies exist.
- He wrote a shorter, simpler account of Hindu-Arabic arithmetic, *Libro di minor guisa* ("Book in a smaller manner") aimed at merchants, which modern historians think was the work most responsible for popularizing the new methods in Europe, but no copies were found.
- *Practica geometriae* (1220) is a geometry textbook.
- Flos (1225) presents Leonardo's solutions to a series of challenge problems posed to him in a public display in the Court of the Emperor Frederick II.



The first page of a copy of the 1228 edition of *Liber abbaci* kept in the Siena Public Library, believed to date from the late 13th Century.

- The first edition of *Liber abbaci* has not survived.
 Leonardo completed a second edition in 1228, and several late 13th or early 14th century copies exist.
- He wrote a shorter, simpler account of Hindu-Arabic arithmetic, *Libro di minor guisa* ("Book in a smaller manner") aimed at merchants, which modern historians think was the work most responsible for popularizing the new methods in Europe, but no copies were found.
- *Practica geometriae* (1220) is a geometry textbook.
- Flos (1225) presents Leonardo's solutions to a series of challenge problems posed to him in a public display in the Court of the Emperor Frederick II.
- Liber quadratorum. ("Book of Squares", 1225) is an impressive number theory book which, among other things, examines methods to find Pythagorean triples.



The first page of a copy of the 1228 edition of *Liber abbaci* kept in the Siena Public Library, believed to date from the late 13th Century.

+ 1202: First edition of *Liber abbaci*.

1202: First edition of *Liber abbaci*.
Abbacus books (discovered in 1960s)

	and the share of a state of the
Automotive and and later	and the set of the set of the life
The second call of the second	and the second sec
and the second se	sample of the second second
and the second se	the particular descent and there
P. M.D. 422 M.D.4	station in the second in which it is
- Jack and and or such i specific	And in the second line of
the lot of the second second second	A DECEMBER OF THE OWNER
Construction of the Automation	and product in which it is not
Man of the other party of the local division	Country and and in frees
and the second second	the state of the second state of the
	and the second second
other of the party lower and	THE PARTY NAMES OF TAXABLE PARTY.
THE LEVEL THE	
angles his his places	Witness and Property strength of the
- I have be and a part of the	- Andrew Contract Providence
and had also been and	and the second second
	THE PARTY NAMES OF
and they been supported to be	man The Workshow of Long
- A MARY CONSULTS A AND A	C. Here as a prior last to
THE COLUMN STREET	S manufacture
REAL	Smarth
an Barrens	SATE
	SER
1.	Same Same
	Same and a second secon
	S and a second
A series of the	
A series of the	
A series of the	
A series of the	
A series of the	



1202: First edition of *Liber abbaci*.
Abbacus books (discovered in 1960s)
250 have survived:

States of the local division of the later	CONCERNMENT OF STREET	-
		44-
The Subscription of the	A STATE OF THE PARTY OF THE PAR	
and the second second second	a participation of the second	- 35
In Tax Jack Inter	make a support of the	1993
State of the local division of the local div	3.75.57	22
Brand and haven	Department and in locate	17.204
172		132
		- 450
The second second second	A lot of Francisco and the P	12
rands Lank phone bill har	and Theory Maria man	100
of the local tracks	7 162235 16	110
some an one submark	phase and	1.00
and other blakers are		
the state of the second state	Sugar Saider in	14
a string of Street Sec.	and a property from any	
an Barrison with Ridge	and the second second second	1
and breast firsters	and a fairland of	100
the second second	には空間	1
mai al character d'a Table	the owner of the second	10
		100
Cardena Logist Lands		10.100



+ 1202: First edition of *Liber abbaci*. Abbacus books (discovered in 1960s) ♦ 250 have survived: Before 1300: 1 1301-1325: 8 1326-1350:10 1351-1375: 6 1376-1400: 19 1401-1425: 16 1426-1450: 39 1451-1475: 56 1476-1500: 66 After 1501: 30+

the states and the states	1
	5 演 2 5 平 5
	States of the second
	Acquery should be seen and the second
The second secon	TAAA
and a finite state and the party from any	
And Andrew Proprietory Pro-	008

+ 1202: First edition of Liber abbaci. Abbacus books (discovered in 1960s) ♦ 250 have survived: Before 1300: 1 1301-1325: 8 1326-1350:10 1351-1375:6 1376-1400: 19 1401-1425: 16 1426-1450: 39 1451-1475: 56 1476-1500: 66 After 1501: 30+ + Abbacus schools (earliest known in Verona in 1294) 1340-1510: records of 20 in Florence alone

the states as the states	

Why was Leonardo forgotten?





Printing press, 1436

The sole record

Luca Pacioli, 1494, Summa de arithmetica, geometria, proportioni et proportionalità.



And since we follow for the most part Leonardo Pisano, I intend to clarify now that any enunciation mentioned without the name of the author is to be attributed to Leonardo.



Who started the revolution?

12 AN

REAL

Life providing the Lensel

-

and the second s

restance fragment registion in inden

THE REAL PROPERTY.

C line and line

and the plant of the same

And there is a set

And in case of the local division of the loc Sugar Standard

San alinta

- Think and

S BRANN

And Division which the

Artistic plant for star

the property of 2

The later

and the second data

"inopit abliacis" Leonar de De some filien bonaar pram
tores appiner 2.0), co. in about above 2. o. de veroin.
E Raphthom the masmagth mehael forte time phile
fogder mehlerft se mali quir ousil competin asi traiterberit vi
introducental pofisiantai prin filoniari pirreta magne asurin to
בואיישור גבווף לברקיורים עבווין בקורוטיוועו ועולות בעובה ליוור
ution anone buffers of the and the second state of the second
uner ogen fig fina refranzim gir pers till perreis eder futte
twoi mon que turda entre lanta and plantere elige et quartere
רמת הקמירות לרוב לאירות לוד שיוויןם: אלת ליקבורום לויג מישוות יוייים ליייים אינו אינויים אינויים אינויים אינויי אי שלי קליו לאינוי היויים או ויויד שיוויים לאינויים קמיות על מערכי לאינויים אינויים אינויים אינויים אינויים אינ
a mer bertretens netterte an ten Arren Partienen einenen en and merteren tien.
tatttå får tit upta meri mil gatti en nadat f bir mattet plandig
normalization, fright greenerner fuit. vez males then our responses ges
taeir ampelan en q agenmeris gunt ante plans appati empleenn fingli fign
ra aphenes greatered anothing law bur the user Lordsonal Garas
appointer wind point provide provide by fore molecular descriptions
ufa ovy ferrite bustarno mui phat phatere y farena ppeaad aerfa misale
In the most of an and the second s
nere spearent mone whole mitterint and the Park themenint. A the state mine
THEN PLATES IN MILLION OPPORT CALINE DATES AND THE DATE SALE
parten fru fadur puffamma bilitalig, puedanys on affin ga
ow put tortor where perfor less maneners, there distant and the in the figure
a n'adar belar belar hei maenare, persolationege tegar interface.
The new rates being reading the second states and state
ofit tour star pelle lei manne, perstinberge ign intofare. Of agno neur ignute yran result dian. Explit plant, ipaput capità.
The information point level manners permit informage reperind officers and the second state point to a second state of the sec
orie uner seine pette teil maceure, personanise op reper interfacen an no verbariten entimmer une fidens. Explui pieren einerpit capartis. P agino naub figures yr ess organis eine fait filmt egnis sogade une of mitpieres entresonality alas. P futpieres entresonality alas.
orie unor solar pelle lei maentre, persönden oge injer indefaet 14 tel velse inte minnel mit fidens. Evend plagat (parput capetà. 16 agine tanà ligute yener aquati di a et til til til et agui segudi tan sei visit munit; are terretoranit; alas. 9 futterisense unigen cisp: 1 autorna este solaren. 1 autorna este solaren est
orie unor solar pelle lei maentre, persönden oge injer indefaet 14 tel velse inte minnel mit fidens. Evend plagat (parput capetà. 16 agine tanà ligute yener aquati di a et til til til et agui segudi tan sei visit munit; are terretoranit; alas. 9 futterisense unigen cisp: 1 autorna este solaren. 1 autorna este solaren est
oriet unter seiner petite tent innernere, personantiene per eiger industaere auf netwerker inter petite tent fistense. Evenful gelagat (prosputit caparlis, e aginet name ügenten seiner angentit eile feit til til telleft, ogenti sognatet tent sei telleft innellig eine tenterbaunelig abas. Finderstande untegrene reises: e anornen einer reise oprisserete f ormanis eiter anornen tente oprisserete f ormanis miner reise oprisserete f order seiner reise oprisserete f o
opie unor solar pelle lei marine perektiske oge tig e industaen 14 m'teleritus minnel më fidase. Evolut pieçat, ipaput capath. 8 ajnë neur igune, preg, reguti din et në film, egni constitut në bisë multip re pressonik dase. 6 minese multip rise: 6 sustai multip, compare, fingen 6 sustai menge mile compare, fingen facter 6 sustai menge mile pressent findentë ing film diretet 6 sustai menge mile pressent findentë ing film diretet 6 sustai menge mile pressent diretet ing film diretet film
 Beine under seiner seine heit innerntro, permägnigen op injeri inderharen Beine nurb figuten ver zuge organist eine einer inderharen einer einer inderharten einer einer
 Beine under pelle leit innernere persöhnigenge reperindusionen Beine under pelle leit innernere persöhnigenge reperindusionen Beine under gelte leit innernere Bisken. Beine under gelte under gelte leit den der mit felen, ogenit sognader inn nit beiser innernige entere Beine under einer under gelte sonnaren. Beine under einer under einer der einter der einer der einer der einer der einer der einter der eine
 Beine under pelle leit innernere persöhnigenge reperindusionen Beine under pelle leit innernere persöhnigenge reperindusionen Beine under gelte leit innernere Bisken. Beine under gelte under gelte leit den der mit felen, ogenit sognader inn nit beiser innernige entere Beine under einer under gelte sonnaren. Beine under einer under einer der einter der einer der einer der einer der einer der einter der eine
 Beine under pelle leit innernere persöhnigenge reperindusionen Beine under pelle leit innernere persöhnigenge reperindusionen Beine under gelte leit innernere Bisken. Beine under gelte under gelte leit den der mit felen, ogenit sognader inn nit beiser innernige entere Beine under einer under gelte sonnaren. Beine under einer under einer der einter der einer der einer der einer der einer der einter der eine
 a nö verbar sekar pellt kai innænne, pærafanisken og rig a indasken. B agind navå figuren yr eg, opgaldi side et nit tilst, og nit sogsdal inn nit belat innällig et er prinsesanilig alson. B agind navå figuren yr eg, opgaldi side et nit tilst, og nit sogsdal inn nit belat innällig et er prinsesanilig alson. B adoma et et annan prinse ratig: B adoma et er annan prinses B annan et annan et annan et anna prinses B annan et annan et anna prinses B annan et annan et anna prinses B annan et annan et
 a nö verbar sekar pellt kai innænne, pærafanisken og rig a indasken. B agind navå figuren yr eg, opgaldi side et nit tilst, og nit sogsdal inn nit belat innällig et er prinsesanilig alson. B agind navå figuren yr eg, opgaldi side et nit tilst, og nit sogsdal inn nit belat innällig et er prinsesanilig alson. B adoma et et annan prinse ratig: B adoma et er annan prinses B annan et annan et annan et anna prinses B annan et annan et anna prinses B annan et annan et anna prinses B annan et annan et
 a nör ander pellt leit innerner, persöhnigen op rejer inderhare. Be eine inner inner inner frånde. Everlig plagnit sponder inn nör belet innernig som en pellt leit og atten som inner inn
 a nö verbar sekar pellt kai innænne, pærafanisken og rig a indasken. B agind navå figuren yr eg, opgaldi side et nit tilst, og nit sogsdal inn nit belat innällig et er prinsesanilig alson. B agind navå figuren yr eg, opgaldi side et nit tilst, og nit sogsdal inn nit belat innällig et er prinsesanilig alson. B adoma et et annan prinse ratig: B adoma et er annan prinses B annan et annan et annan et anna prinses B annan et annan et anna prinses B annan et annan et anna prinses B annan et annan et
 a nör ander pellt leit innerner, persöhnigen op rejer inderhare. Be eine inner inner inner frånde. Everlig plagnit sponder inn nör belet innernig som en pellt leit og atten som inner inn

the sign are that they want the

- The first edition of *Liber abbaci* has not survived.
 Leonardo completed a second edition in 1228, and several late 13th or early 14th century copies exist.
- He wrote a shorter, simpler account of Hindu-Arabic arithmetic, *Libro di minor guisa* ("Book in a smaller manner") aimed at merchants, which modern historians think was the work most responsible for popularizing the new methods in Europe, but no copies were found
- *Practica geometriae* (1220) is a geometry textbook.
- Flos (1225) presents Leonardo's solutions to a series of challenge problems posed to him in a public display in the Court of the Emperor Frederick II.
- Liber quadratorum. ("Book of Squares", 1225) is an impressive number theory book which, among other things, examines methods to find Pythagorean triples.



The first page of a copy of the 1228 edition of *Liber abbaci* kept in the Siena Public Library, believed to date from the late 13th Century.

- The first edition of *Liber abbaci* has not survived.
 Leonardo completed a second edition in 1228, and several late 13th or early 14th century copies exist.
- He wrote a shorter, simpler account of Hindu-Arabic arithmetic, *Libro di minor guisa* ("Book in a smaller manner") aimed at merchants, which modern historians think was the work most responsible for popularizing the new methods in Europe, but no copies were found until 2003.
- *Practica geometriae* (1220) is a geometry textbook.
- Flos (1225) presents Leonardo's solutions to a series of challenge problems posed to him in a public display in the Court of the Emperor Frederick II.
- Liber quadratorum. ("Book of Squares", 1225) is an impressive number theory book which, among other things, examines methods to find Pythagorean triples.



The first page of a copy of the 1228 edition of *Liber abbaci* kept in the Siena Public Library, believed to date from the late 13th Century.



Prof Rafaella Franci



Via de' Ginari 10, Florence



Prof Rafaella Franci

Via de' Ginari 10, Florence

Prof Rafaella Franci

Riccardiana Library



134

Linto ene tolintere ce l'ablatis blants taopemone te liettro teonarilo cetadula teorimentigle tonage ta la topmo d'apriolo ene teleregiè olene d'ofe : d'a formo d'apriolo ene teleregiè olene d'ofe : de formo d'apriolo ene teleregiè olene d'ofe : quilla dota d'enoie nolemo fare oquila de none te quilla me tertima aporte nella

Oglono one lafenpio alatoren regla enogio one du fi i mugnane na giono ej corrone fe que minorno gle p mugnane tere fare duti mildure - frate o defon no za epime pipo denemene tenare no ecomi fale femeglante pagrone.

Text fosse oran alcouna ragione nellaquaie fepponet fe ne dofe couluma acie core pare remange aneffe per to froenemo fape enque numero fermiona quisto ne to faputo enque uno quisto nero freenemo milicare ame coro epare remanze prale unio enque fermona qu lo nerto.

Siglono pare lafepto ala pieta regla enogio pire den fi baacia 9 4 vepanno nagiono 17 9 que ne udionno gle q basia ceretare deufi redeue afano p quitto tecto de trupo en pie fiaze 17 tenare de fanno que tenaro os rememo pire 17 basia ceptimo nagiono que tena to que ne nationno gle q basia freenemo miliare 4 fi are que cenare 10 2 te tenaro comemo de fe basia 9 4 mene cenare 10 2 te tenaro ocarremo de fe basia 9 4 reparimo nagiono 7 9 demengono gle q basia tenar 10 12 te tenaro de unifica lefemeglante tragaonte phese Enefosse outo euno finme loquale finme obi 2 12 coalaltro churro velfinme sista uno abore loquale no sapemo quarro siaal to un fro noglo fine una schala degionga cala upa velfinme eutro ala cuna ve la lore acomacore quato cal so la lore equato fira al ta las chula-quista ela sia vegla cienore o nemo piglare el 4 cola la gega colfinme nov ce la 212 de la 2 e oglquagle agrogé emsteme dom la 112 estante d'a se 119 edora to sin gran ce la scala epsape quanto sira al to larbore fice sin 2 o edoranto fira al to larbore fice sin 2 o edoranto fira al to larbore se se se estanto fira al to larbore se estante se estanto fira al to larbore se estante se estanto fira al to larbore se estanto fira

Selauolemo pronare ficenemo mi dure lalagren voltume premetermo concert matiz defa bai 196 modenemo mudane lorgo celartore come ? 9 ma ? 9 defi og so colquagte agiongne emfieme cho be and to efara bieg 44' angiquagte tenemo ttouare lafua morge de 11 domo uole effent edun filefemeglante mgioc apoto, Enefolle onto de uno arlora alto ba enno finme capiere relarioze e dio noglo po ne una faula cula qua cola lore alaproma ælfume acomatore quato fina largo elfi ume equato fin larga latchala aponro.qui Anelafia regla por denoro cenemo pigla w el celalagega celalose gar ar bi de bit 8 ogrogne topza abi 429 ofam bi

he calla to

Codex 2404, Umbrian author, ca 1290



into ene toffatero se lablatis solucto taopemone w intro teonatio veladuala teoministice tonage un opmo d'apriolo cire veleregiè colene d'ofe : de formo d'a d'enore noterno fare colla de none vegnilla me velora aporte nella

1.111

110

feme

Stre?

fe nu

TO 1a

ame

10,10

3g

Enefosse onto euno finme loquale finme obi 2 te coulaito danto velfinme fista uno abore loquale no fapemo quanto fiaal to un fio noglo fure una fdala degionga vala una velfinme entro ala cuma ve la lore

ne

10g

in

12

fira

are

1212

ant

64

1110

wm

This is the book of abacus according to the opinion of master Leonardo of the bouse of sons of Bonacie from Pisa.

gle 9 kana veretare doufs redoure afatto pourfo terro de terro efibiz frate ## de fanno 17 ba ta ozte nemo one 7 frate 1- tenare de fanno 91 tenaro os tenemo one 17 kate 1- tenare de fanno 91 tenar to que nenaronno gle 9 teana freenemo mliane 9 ft ate 91 tenaro de fonno z 94 tenare aporte p17 dene mene cenar 10 ft te tenaro comemo de fe bana 9 1 terrano naglo or 5 denengo 10 gle 9 bana tenar 10 ft tenaro de fonno z 94 tenare de fe bana 9 1 ttouare lafua monge de gri domo uole effert eduft falefemeglante mono apoto, Enefoste onto de uno artora alto b2 = 4 enno finme capiere telartore e dio noglo po në una stala cala cina telabore alaproma telfinme acomatore quato sina largo elfi inme equa to sina larga laschala aponto, qui strelastia regla que denoro tenemo pigla ite el zelalagega telabore que to bi 1 = 1 de biz = 8 ogrogne sopra abi = 1 = 9 esam bi

Codex 2404, Umbrian author, ca 1290

The birth of modern finance (13th Century) Capodistria - Crer Padua D Lodia di Chicoggia ^D Placenza Banking (banca) + Bobbio LOMBARD Comacchic ADRIATIC SEA Pistoia o Insurance (polizza) NCONA International trading empires Tagliacozzo original duchy of Rome before 756 KINGDOM OF lands donated by Pepin, king of the Franks 756 SIGILY lands acquired 757-74 lands acquired 781-89 nds and towns under effective control Double-entry the papacy 962 inds acquired 1053 tathildine estates o Som bookkeeping (Medicis) ands "recuperated" by Innocent III 1198-1216 or brought under control 1217-78 cognized northern boundary 1201-13 scale 1: 4 000 000 choicesy 100 km moortant monastery 75 m site and date of important battle

The birth of modern finance (13th Century) Capodistria Padua D Lodia di Chicoggia ^D Placenza Banking (banca) + Bobbio LOMBARD Comacchic ADRIATIC SEA Pistoia o Insurance (polizza) NCONA International trading empires Tagliacozzo original duchy of Rome before 756 KINGDOM OF lands donated by Pepin, king of the Franks 756 SIGILY lands acquired 757-74 lands acquired 781-89 nds and towns under effective control Double-entry the papacy 962 inds acquired 1053 tathildine estates o Som bookkeeping (Medicis) ands "recuperated" by Innocent III 1198-1216 or brought under control 1217-78 cognized northern boundary 1201-13 scale 1: 4 000 000 choicesy 100 km moortant monastery 75 m site and date of important battle

My Leonardo books



New York: Walker & Co.



e-book original

The Comparison



The Comparison

Both took ideas developed by others and developed/marketed them for widespread use.

The Comparison

 Both took ideas developed by others and developed/marketed them for widespread use. The key idea in both cases was a user-friendly interface that reconceptualized the activity.



Marketing savvy

"Inapit abling " Leonar De De tomo filore bonant prom	
The Spine 2.0. Co. n. abrest abute 1. S. le . works.	
6 Raptithe m beis un a magett mehael forte fime plate	
Souther in the antiput and an antiput and the state of a	
utrerenantet pefedates fen fidenbert ferntift mingente asprin to	
one same and have the product of the	
בייים בביים שביים שביים שביים ביים ביים	
start othe surrow mill and open sand the first and the full	
tuei ane que tueli muji lamite aut planteri dige fr quarter	
the operative for the fit energy where and the second white	
P ad please on a series and the series and a series of the	
tarte ihu rit inna moti mil gant que tarta fige ganthe plandig	
chemotherally affend germetrici fail. Ven state they are reported on	
there emprise as a degenerate present color plants apparts explanate forgets from	
17 Optimile grouperton and takes fore by his outs of Lordson in feature	
any realized by the part of the second by the the second by any the second seco	
site over a traine busiter the start plant printers of the same process and the same	
IN THE DATE AND DETAILS OF ADDRESS OF ADDRESS OF THE PARTY OF ADDRESS OF THE PARTY OF ADDRESS OF AD	
Balanders they "sheemar. By the construction when we want and and	
from Pringle has manual obsert orbital property as effectively had been the factor	
names from hadron and and a lot of a state of the	
Transmission of an and the family support of a party state of the second state of the	
portant fir an fantare partit sentra ball tigdi p. produktion oor off. in pap brind lander antañ polite kaaf manante, portefantion ego tig se indaethoen	
na ne ne inter anar per las margine per la parte per interfacen	
O fo ajud unde lignen vere regeli del det nit tilet. egeli sande in	
The off which and the second of the second s	
The off which and the second of the second s	
O fo afnet under som en margine, personalt berger teger inderfasen O fo afnet nede figteten veroge ogsåalf del det mit filset også ogsåaf ten of teleformelig over protosensig alas.	
or pri terer sonar poter sen marenne, parrilin basege teger interfaces of a tribefarthas miseuri nër fasus. Gupitë playtit, rjunpatë caper hi. of agind nosis figuras programpite class. of telef musik; etc metocaniti, class. of autopianale museumite. of antipianale museumite. of antipianale museumite.	
orient som onter som som som merure, parrikitt beoge regar interfactor of a tribefordtas minensi som fasses, förskill pågat, rjonspati caparlis, förska task figtetes onter openaliseli för nät til det synsk sogadni ten nät beler mentilt, ore menterensik, atas. of fulltplannik mengen ming: fastensik pås. sommeren: förstande mengen ming: förstande mengen mingen openangelig.	
orien terrer sonter sonte sont marrier, parrient basege regre interfactor na tet befordtas eniamen und falsas. Grephi plagat, ipnapait caparlà. O fogind terri figueza venez equali del det nil filett egen segudat ten ni beler ennilt, ere pressonalit, alas. Gruftplanni eniagen eniag: 6 satemi ple. concurrer: 6 satemi ple. concurrer: 6 satemi eniagen eniag ; 6 satemi eniagen eniag; 6 satemi eniagen	
 To be and a set of the set of t	
 Verin terrer verten peter ind mærenre, pærefiktiskærer tegre industionen Te tet verker blav minamit stör federas. Evenkit pågett egne industionen Fegine terrer verker verker også federas. Festiverse terrer verker stör verker federas. Festiverse terrer verker verker verker industriet verker industriet industriet verker verker verker verker industriet. Festiverse terrer verker verker verker industriet industriet industriet verker verker verker verker industriet. Festiverse terrer verker verker verker verker industriet. Festiverse verker verker verker verker industriet. Festiverse verker verker verker verker verker industriet. Ergens verker verker verker verker verker verker industriet. Ergens verker verker verker verker verker verker industriet. 	
Verni terer verter seine sein marrier parrientssege uppe interfacen o in it wiederliche misami um these des die fait mit these seine in an o fe agind tende figunge verse reputal die fait mit these seine agent in of inder mendig wie personangie data. O fe alter interface and marging ming: fe anome intergrap ming: fe anome intergrap ming: fe anome intergrap ming personangie. fe alternation intergrap ming personangie. fe anome intergrap ming personangie. fe alternation intergrap ming personangie. fe anome intergrap mange personal of the interaction manife. B fe anome intergrap mende interaction interaction and interactions interaction. B fe anome intergrap mende interaction interaction and interaction interaction interaction. B fe feddends familie	
 Versit some sonter som merenne parrikitt basege teger interfacen. A til befordete en mannet som første some og som en som en	
 Versit some sonter som merenne parrikitt basege teger interfacen. A til befordete en mannet som første some og som en som en	
 Versit inter versite peter internet, permit hange uppet interface. A interfaction minimum unit factors. Genetic players, iproposit capacities on an interface of the second system on a peter interface of the second system of the second system. A second system of the second system. A second system of the second system of the second system. A second system of the second system of the second system. A second system of the second system of the second system. A second system of the second system of the second system. A second system of the second system of the second system. A second sys	
 Versit inter versite peter internet, permit hange uppet interface. A interfaction minimum unit factors. Genetic players, iproposit capacities on an interface of the second system on a peter interface of the second system of the second system. A second system of the second system. A second system of the second system of the second system. A second system of the second system of the second system. A second system of the second system of the second system. A second system of the second system of the second system. A second system of the second system of the second system. A second sys	100 100 100 100 100 100 100 100 100 100
 Nem torer sonar petr inst mærerer, pærefambærer reger interfacer na interfamblas minami svir fakass. Evenki gravni reger interfambærer f sight node figning værer regerig af det for nil til efter sjudi sogadni inn må interfamblas minger, organisk state. f suthplansk mingers mäge : f suthplansk mingers mäge ; f suthplansk mingers ; f suthplan	
 Nem torer sonar petr inst mærerer, pærefambærer reger interfacer na interfamblas minami svir fakass. Evenki gravni reger interfambærer f sight node figning værer regerig af det for nil til efter sjudi sogadni inn må interfamblas minger, organisk state. f suthplansk mingers mäge : f suthplansk mingers mäge ; f suthplansk mingers ; f suthplan	
 Versit inter versite peter internet, permit hange upper interface. Prograd neuk figutes yrang, myndel defert nil tilef egent ogsådel om nil teler mentig, de trette sjøtes jennes internet defert i de tileforder egent ogsådel om nil teler mentig, de trette sjøtes jennes i de trette sjøtes om nil teler mentig, de trette sjøtes i de trette sjøte ogsådel om nil teler mentig, de trette sjøte ogsådel og trette sjøte ogsådel og trette sjøte ogsådel og trette sjøte ogsådel og trette sjøte og tret	
 Nem torer sonar petr inst mærerer, pærefambærer reger interfacer na interfamblas minami svir fakass. Evenki gravni reger interfambærer f sight node figning værer regerig af det for nil til efter sjudi sogadni inn må interfamblas minger, organisk state. f suthplansk mingers mäge : f suthplansk mingers mäge ; f suthplansk mingers ; f suthplan	



unt ablacif leonards de tomo filos bonans pitam Wind: 2. 0), ec. 11. adrey Abare. 1. O. le. goons. E Rapitho m tele un amagni mehaci forte fime phile festie milerit semali qui aus a conpetia aci milerie vi aus hit potestation of the file then formatif manguage as per in to הייזי אנוגים וויזינים וויזינים אומי אינו איז איזיין אומי איזיין איזיין איזיין איזיין איזיין איזיין איזיין איזי איזיין איזיי איזיין tarres fibe ein inper mobil sell egenet, que tadet & bijer geneter planelly menutanili stigal present fullives suite tim of reparate terir empile a falgement grant alle plan open open fagli fige aprind being a the state would be for a dart of states ala covienta bastario nal fini planer o fasas pound acta mbala to monote property descents descents of an internet and bibisito field "steame By fe on mater very were stated from release has married other granted proves parters frut father pair sentra bailt

tofet later utur pette las manages pa 134 Thing our Lifettie or Lebade Riberto Longenont's 14 te arfer the misenvi stir fidene. By

Of agreed words Squares under reputer die a solar monsily one promounable class.

Of all place wat grow rains! C statement site Fernand minap take or marting Benath angen the setured. O Freynderwenetter tip senatul eftend O 6 heren of the college of store and the O Fladiethy farm and workent

O f ald reason meterap con cap signifit ques O filan mitten prinen fritigent ernen O & methe descontin quale provid for Person O frameric ment outilipiante saveta O Chain' quattoni guesses persini.

in figure yander has first. "Hang V1111. Vm. M. M. 8

7m 6

19

Rive fatie mats aldrana Rogione ellas The repoponette tre cieve from misane milla dosa denoic notemo fare calla more requillo mererina oponicisella

maile to Lichala regimentable tonage mi

Optono vare lafente ala contente tegla congla cont den " This ynaw vere fair don't milidane " fater of chefon no La epanie pipe denement achan no colomb faic Semigliner Bargaone

I presente to a alduna ragione nellaque e feponet Te ne chofe conlume sele sour pare penange anothe ser to focueros tope enque numero fermona quato ne to far une enque une quitte nore freeneme mlican Ametono cone renanze pulle mie enque fermono qu LA HATD.

Betono mar Selepso ala maria negla eneglo pueda fe barts ? + repueno magione : " o que ne manonno gle q bana orienare doufs redout afanto p surflo sano de trop divit fate ya de fanno in brana otre nemo ouer fame :- wnare de frangen une manene our 17 leans orpanue magione 11 mina to que ne names ates to ano frecuento miliane si fi and it before de formo ? sis winde apartire parti danse asone wount to de bevenue contente a de fe banna ?! reparation nagla dat " b de nengo no gie of biana base ing we remane of afirfa televicitante sagnand alter

Marketing savvy

put ablance leven of be over files bonan prom point 2. 0), ec. 1. abren source 1. O. le. govin E Rapitho m tele un amagni mehaci forte fime phile Copier in the firm and and any and any the colorer of aus toit portestante i pin fillenhers forestif entegrate as perin to הייזי אנוגים וויזינים וויזינים איזיין איזיגער איזיין איזיגער איזיין איזיגער איזיין איזיי איזיין tarres fibe ein inper mobil sell egenet, que tadet & bijer geneter planelly menutanili stigal present fullives suite tim of reparate terir empfan a julgement grant alte plan open epitem fagil fijn aprind being a the state would be for a dart of states ala e sy irrate bustario aut fini planer y fanas prasi orfe mbak to monote property deserves deserves and an and the second se bibisito field "steame By fe on mater very were stated from releption and manual prover granted prover parters frut father pair sentra bailt

terine lanter untail petter last management par 134 Contro ene tallattie os Latada Riberto Longenont'a 14 te'arfier that minenet seit fidante. Er Fagned werd Spran unter reputit die

a relati month; one personnality class. Of all phone water water Casterio alle annone Fernandi minap tilip (vinnatis Besuth angen stay junger. O Fright wanters the second of the O & hernert ers miltit. ette staptale belter O Fladiethy farm and workent

O f ald reason meterap con cap signifit ques O & folan on the place frei put eren O & nela element quad genit for it eren O frauens then antiquest covers O Chain' quattoni guesses persini.

in figure years hav fare. Think Von. Du. Va. V1111. 3 8 7m 6

Corne astrone was aldeana Regione ellas The sey-oponette tre ciene score mo misere ulla dosa denoic nolemo fays õgita more requillo merettina opoticizella

maile to Laborar regeneration of tonage The

Optono tore lafentes abroaren regla energia oue den fel tamignarie na giorio que corrone fe qui udarena gle " and yname new fair don't mindene - fater of chefon no ba epume pipe denement when a or whithic Semeghaner That game

I presente to a alduna ragione nellaque e feponet fe ne dofe conlume selevoue pare penange anothe sor to focueros tope enque numero fermona quato ne to far une enque une quitte nore freeneme mlican Ametono cone renanze pulle mie enque fermono qu la mun.

Belano mue Mepaania meta matio Duredan fe banta ? + repueno magiono : " o que ne manonno gle q bana orienare doufs redout afanto p surflo sano de trop divit fate ya de fanno in brana otre nemo ouer fame :- wnare de frangen une manene our 17 leans orpanue magione 11 mina to que ne names ates to ano frecuento miliane si fi and all berness of tennes 1919 Winder aporter parts dame asone wount to de bevenue contente a de fe banna ?! reparation nagla dat " b de nengo no gie of biana base ing we remane of afirfa televicitante sagnand alter

THE REAL PROPERTY


nt abling Loon or De De Demo filos bonas pitin Mart 2. 07. Co. 1. adrey Abarte 2. B. le . goon E RApfethom wir mit amagent michael forte fime phile Gybe weitert semiligue aus anterin unt mikmlerit vil aus hat portestante infer filenhart forestif entagente as per in ho tarres fibe ein inper mobil sell egenet, que tadet & bijer geneter planelly menutanili stigal geneenet full ver mate tim of reparage tarir empfan a fulgement ganaf ada plan apart episons fagil fijn aprind being a the state would be for a dart of states ala e oviennie bustatio auf fini ginaere o famas pressi ortie minde to monote property deserves deserves and an analysis of bibisito field "storme By fe on mater very were stated frail beinpfe hab material school gradual proves parters frut father pair sentra bailt

te for lander untail porte las finances par 134 Contra ene talattie est atatis filmate tangement te 14 te'arfier that minenet seit fidante. Er Fagnat nosis Square ynter reputif die

when month; one personnelle, chan. Of alt has the stage of the Castonia sile operation Fernand manap take connection Benath angun they gateget

O F repaid wanted the second of other O & Second ers mila i. ale etapaie beite O Fladiethy farmi and and and

O falammer mente muse profit que O & methe descontin quale provid for Person O frauent ment outly were server O Chanie quetteril guenneto genieni.

7m 6

ton fighter weather hav firme. There Van. Du. Va. V1111. 8

3

These fattle work aldsana Ragione ellas The reproponette the civic from minane ulla dosa denoic nolemo fays ègita mone to quallo me terrine oponio sella

name or Lichola regementione tonage The

Oglono war lafenjus alarenda negla enogia var dan fis tangnane na giono q conteste fe qui ularano gle " and yname new fair don't mindene - fater of chefon no ba epume pipe denement when a or whithic Semeglaner Bargaone

I gree folle viena aldunna ragione nellaque e feponer fe ne dofe conlume selevoue pare venange anothe ser to Spears of the enque numero fermiona quato me to far une enque une quitte nore freeneme mlican Ametono cone renanze pulle mie enque fermono qu la mun.

Belano mue Mepaania meta matio Duredan fe banta ? + repueno magiono : " o que ne manonno gle q bana orienare doufs redout afanto p surflo sano de trop divit fate ya de fanno in brana otre nemo ouvi faze :- wnare de franagen salos. penems piser 17 leans orpanne magione 11 ming so que ne namero gie q teans freeneno miliane a fi and all berness of tennes 1919 Winder aporter parts dame asone wount to de bevenue contente a de fe banna ?! reparation nagla dat " b de nengo no gie of biana base in the memory of a first tereminglainte tagenent after

10111111



The Siena Manuscript.

.1.

napit abbang leonards de tomo filion bonani pilan Topoint: 2.0), cc. 11 down Abcore. 2.0. Cc. 200011. E Raphifue mi trie mu amagift muchael forte fame plate fordie antiderit bermiliquie supil competin and trafferdere vil an hat pothel anor opin fidelbors perset in bagune an ar in bo ווות התוראו של היו האירות לה היותים היותר היותר היותר לה היותר היות tattets fibre tin tapita mobil mil opant, quenadut & Dift gemittet plattelle nternoftneufib afiguit gremetner fuit. ven mahe hbro que topenca gre their amplan as a demarti punt alle plan apuel explana fingli figa rif aplantik ground and fran Lute be the maget fortheond from sprint to fig a thing harme stand bit fur adapti sport of stane ula novierente bustarno nue piur pluterre ginema promi arria missie נו ווייזארוג קווטרווגר להם מינטירגרוור הוויזאיט ירוקטרון א קטעה וויי ועי Sein stars they "alcount they for our methics were write unlease utile funt maple ha marin store gradat pourt appletions but homes bale partinte frut fantier prist sentena bei tilen poperatingt er all funget teist later ustat felle inf muente, parafittbereje tigte infaffaet. O na ne vefter filme enisonei une fidens. Explit plagat frapent capirlà. on what monthly one providentially alast-Of mithelions wintegroup raise: O & ADDITION ADDITION OF C Contained mittigs takin overneeting Tupter fer Ses 8 Fourter ungene man gentegent. Emilenta itag unen dorupen an O & ctopted menorità esp useratui offendan. [light perule moudie. O & housed en unital othe emptite beforsthe region mylet this O Floring faces and orrigitat O Colomme reverse and edo taget d'venteren family. O folum mitter polan form aus armat apalan. O fogte elementariade prim for of armae fort telate. O & museres varea antipuante anonie a esterie au outo se astud. nem figure yender bes fare. Theput capitulit pmu. with bit. bit. W. ann. and in a VIII. 3 8 4 6 1 5 5

a spranitic type are po



The Siena Manuscript.

Introductioned in a setting of the matrix Corr is formation of the setting of the set of function of the set of the se	$\begin{array}{cccccccccccccccccccccccccccccccccccc$						2.17		10000	100	and the second	214	and the second particular	1000
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	19.2	199							1				
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		Jan	TOU	mor	ef ma	no		an and a lain					
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		10.00	C .	unt	1	lama	44.60	PERSONAL PROPERTY.	16.00	+ 62 600	of the last		
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c} z & y & z \\ z $		12	2			700		the second s				Cequinario	-
$ \begin{array}{cccccc} z & z & z & z & z & z & z & z & z & z $	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$					-	7			1.00		ITO	7 4	1000
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c} z & z & z & z & z & z & z & z & z & z $						7	2	16				PL I	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$					3	7	-			0275.	-	1	24
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		2	8						17				1000
Innua Engrit. Oet O funr 19, for t g funr 160 Or Senaru $tet T funr G$ 0 10 10 30 00 170 Graf G fuir ZG $tot T 7$ $naru T 7$	Imma Finarii. $get g fumr ig get g fumr io get g fumr ic get g fur fur fur fur fur fur fur fur fur fur$		12	4		11		-		Page 2		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	111 111	57
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		2	10	1.7	17	3	10	18	70	30	100	7 10	40
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		and some one				Act	591	iune 18	800	r go fran	#160	de Senaru	100
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		Ea	2	timu	rG	9	10	15	30	90	170	6 meet 6 fai	# 26
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$.7	10 ct			-	Achin	F 140	6 7	12
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$						_	_	unt ro		and the second se			TO
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$					1				Jna			6 3	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		Ŧ				20	10	-60	Debi	nane		Carlie Carl	
$\frac{2}{10} \frac{10}{12} \frac{10}{10} \frac{10}{12} \frac{10}{10} \frac{70}{10} \frac{70}$	$\frac{z}{10} \frac{10}{12} \frac{10}{z0} \frac{70}{70} \frac{90}{10} \frac{z}{z} \frac{r}{s} \frac{s}{10} \frac{100}{700} \frac{r}{z} \frac{r}{s} \frac{s}{10} \frac{100}{700} \frac{r}{z} \frac{r}{s} \frac{s}{10} \frac{100}{700} \frac{r}{z} \frac{r}{s} \frac{s}{10} \frac{100}{700} \frac{r}{z} \frac{s}{10} \frac{r}{10} \frac{r}{10} \frac{r}{10} \frac{s}{10} \frac{r}{10} \frac{r}{10} \frac{s}{10} \frac{r}{10} \frac{s}{10} \frac{r}{10} \frac{r}{70} \frac{s}{10} \frac{s}{10} \frac{r}{10} \frac{r}{70} \frac{s}{10} \frac{s}{10} \frac{r}{10} \frac{r}{70} \frac{s}{10} \frac{s}{10} \frac{s}{10} \frac{r}{10} \frac{r}{70} \frac{s}{10} s$			2						210		1		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Imagenting to to so to to <thto< th=""> to to<th></th><th></th><th>2</th><th></th><th></th><th>1 C C C C C C C C C C C C C C C C C C C</th><th></th><th></th><th>E</th><th></th><th></th><th>de Septena</th><th>uruo 🛛</th></thto<>			2			1 C C C C C C C C C C C C C C C C C C C			E			de Septena	uruo 🛛
$\frac{4114444111111111}{12} \frac{1}{10} \frac{1}{9} \frac{1}{9} \frac{1}{9} \frac{1}{10} \frac{1}{10} \frac{1}{7} \frac{1}{10} \frac{1}{10} \frac{1}{7} \frac{1}{10} \frac{1}{10$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$				-		A 14 19						7 mar 7 h	uit ra
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$			_			1000						7 8	46
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$			-	14121		toe		-		7		and the second se	
1° 7 11 20 60 90 Detuno December 10 1° 8 12 20 70 100 Detunot E frame 9 gauar 6 frat 6 frat <t< th=""><th>1' 7 11 20 60 90 Definition Decentomaria 1' 8 12 20 70 100 Definition Decentomaria 1' 8 12 20 90 110 2 1' 12 9 100 2 1' <td< th=""><th></th><th>r</th><th>9</th><th>1</th><th></th><th>100 C 100 C 100 C</th><th>10</th><th>70</th><th>27</th><th>Pa</th><th></th><th>and the second se</th><th></th></td<></th></t<>	1' 7 11 20 60 90 Definition Decentomaria 1' 8 12 20 70 100 Definition Decentomaria 1' 8 12 20 90 110 2 1' 12 9 100 2 1' <td< th=""><th></th><th>r</th><th>9</th><th>1</th><th></th><th>100 C 100 C 100 C</th><th>10</th><th>70</th><th>27</th><th>Pa</th><th></th><th>and the second se</th><th></th></td<>		r	9	1		100 C 100 C 100 C	10	70	27	Pa		and the second se	
I 8 IZ 20 Go 90 Detarro Deceronario F 9 IZ 20 90 100 2 Finant 9 gauering funit Gr F 10 17 20 90 120 2 90 120 2 90 120 2 90 120 2 7 17 8 9 7 7 Imma quantaria 10 17 20 90 120 2 7 17 8 9 7 7 10 8 9 7 7 10 10 90 20 2 3 7 7 10 80 10 80 10 80 10 80 10 80 10 80 10 80 10 80 10 80 10	I I Io Io <thio< th=""> Io <thio< th=""> <thio<< th=""><th></th><th>T I</th><th></th><th></th><th></th><th>Eo</th><th></th><th>30</th><th></th><th>10</th><th>TO</th><th>1</th><th>1</th></thio<<></thio<></thio<>		T I				Eo		30		10	TO	1	1
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	1.1								Deta	arna .		Deactonary	,
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$						1					-	guines fui	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$,			20	30	110	Z	100	17		
Yet 9 funt 10 10 90 $\frac{7}{2}$	Y et y funt is 10 10 90 $\frac{7}{2}$ $\frac{7}$		F 1	0	1	1.45	1.						9 4	+T
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$				-	11	Eo	y				17	all	1 1 1 1
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Y S 12 10 70 110 Nequifinanto Juncef Shint &1 Y D 1 10 80 120 1 vicef y funnt 16 10 10 10 Y 10 1.7 10 1.7 10 1.0 10 10 10 10 10 10 10 10 10 10 10 10 10 10 20 Tanna Smartin 40 60 100 1 7 7 10 10 20 Tanna Smartin 40 60 100 1 7 7 10 20 Tanna Smartin 40 60 110 1 7 7 10 10 20 G 7 12 40 60 110 1 7 7 10 </th <th></th> <th>James</th> <th>444</th> <th></th> <th>ĩ.</th> <th>Eo</th> <th>y</th> <th></th> <th>EE</th> <th>107</th> <th>竹田丁</th> <th>all</th> <th>1 1 1 1</th>		James	444		ĩ.	Eo	y		EE	107	竹田丁	all	1 1 1 1
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Y S 12 10 70 110 Nequifinanto Juncef Shint &1 Y D 1 10 80 120 1 vicef y funnt 16 10 10 10 Y 10 1.7 10 1.7 10 1.0 10 10 10 10 10 10 10 10 10 10 10 10 10 10 20 Tanna Smartin 40 60 100 1 7 7 10 10 20 Tanna Smartin 40 60 100 1 7 7 10 20 Tanna Smartin 40 60 110 1 7 7 10 10 20 G 7 12 40 60 110 1 7 7 10 </th <th></th> <th>James</th> <th>qui 9 fii</th> <th></th> <th>10</th> <th>to To</th> <th>90 T , 10</th> <th>Franciso</th> <th>المردي ومر</th> <th>207.8</th> <th>いろうで</th> <th>all</th> <th>1 1 1 1</th>		James	qui 9 fii		10	to To	90 T , 10	Franciso	المردي ومر	207.8	いろうで	all	1 1 1 1
7 3 1 1° 80 120 1° 10 17 10 1	7 3 1 11 10 10 10 10 10 10 10 10 10 30 7 10 11 10 30 120 1 9 20 10 30 <u>Juna Granic</u> 90 02 90 120 1 9 20 30 <u>Juna Granic</u> 90 02 90 120 1 6. 27 <u>Dedacmaruo</u> 6 7 12 90 00 110 1 7 28 0 8 11 90 70 120 1 8 22 6 9 17 90 80 120 1 9 26		James Yet	4111 9 fu		10	to To	90 T + 10 40	Frank go	בא בין ייו בא בא	207.8	いいいちち	g 10	80
Y 10 17 70 30 120 Y To 30 Janua Granii 90 ett 90 fuit 100 10 5 5 7 G 7 12 90 ett 90 fuit 100 10 7 7 G 7 12 90 to 110 7 78 G 8 11' 90 120 8 12 G 8 11' 90 120 8 12 G 9 17 90 80 120 7 G 9 17 90 10 10 10	4 10 17 70 30 120 f 7 τω 7 10 30 Элина Анаги. 40 ес 40 fuir 100 f 6 cr Debermario 6 7 12 40 60 110 f 7 78 6 8 11' 40 70 120 f 8 22 6 9 17 40 80 120 f 8 22		yer, yer,	9 fu		10 11 12	to to	29 T + 40 40 60	Frume 90	רא ביא בין אין בא באן	107.002	いいいちち	g 10 demonent	80
Janua Granii. 40 et subilition f 6. CT Debermario 6 re 6 filant 12 40 to 10 t 7 78 10 moef 10 fillt 100 6 re 6 filant 12 40 to 10 t 7 78 10 moef 10 fillt 100 6 8 11' 40 7'0 120 t' 8 22 10 moef 10 fillt 100 6 9 17 90 80 120 t' 9 26	Janua femarii. 40 et 40 fait 100 t 6. Tr Debermario 6 rt G funt 12 40 et 40 fait 100 t 7 6. Tr Debermario 6 rt G funt 12 40 to 110 t 7 TB 10 moef 10 fait 100 6 rt G funt 12 40 to 110 t 7 TB 10 moef 10 fait 100 6 8 11 40 70 120 t 8 22 10 moef 10 fait 100 6 9 17 40 80 120 t 9 26		Jama 9 et 19 9 9	e fil		10 11 12	20 100	2 40 GO 70	Frantingo 300 100	Terestaria Colo	7.57 8 0 10 10 10 10	ちられなびる	g 10 demonent	80
6 7 12 40 60 110 7 7 78 0 7 12 40 70 120 r 8 22 6 9 17 40 80 120 r 9 26 6 9 17 40 80 120 r 9 26	6 7 12 40 60 110 7 7 78 0 7 12 40 70 120 7 8 EZ 6 8 17 40 70 120 7 8 EZ 6 9 17 40 80 120 7 9 26	•	14m1	office of the second		10 11 12 12 11 11 12 12 11	20 100 10 10	20 TO 00 70 80	Frank go 30 100 110 120	もももでもも	7.57.8 0 10 attime	17日日 57日 16	g 10 demonena guncef 5 t	80 110
6 9 17 90 80 120 r 8 EZ 10 meetiofuit 100	6 3 17 40 70 120 r 8 EZ 10 moef 10 fuit 100		14m1	9 fi	at and a state of the	10 11 12 12 11 11 12 12 11	20 10 10 10 10 10	29 to 400 70 80 30	Frank go 30 110 120 120	モモモモモモ	7078010 aft for	5日14万日 16 20	g 10 demonena guncef 5 t	80 110
6 8 Hr 40 70 120 r 8 22 6 9 17 70 80 120 r 9 26	6 8 Hr 40 70 120 r 8 EZ 6 9 17 90 80 120 r 9 26	· · · ·	Jami, 9 et 9 (9) 9 (9) 9) 9 (9) 9) 9) 9) 9) 9 (9) 9 (9) 9 (9) 9 (9) 9 (9) 9) 9 (9) 9 (9) 9) 9) 9 (9) 9) 9) 9 (9) 9) 9 (9) 9) 9 (9) 9) 9) 9 (9) 9) 9) 9 (9) 9) 9 () 9) 9) 9) 9) 9) 9) 9 () 9) 9) 9) 9) 9) 9) 9) 9) 9) 9	9 fi	unt:	10 11 12 12 11 11 11 11 11 11 11 11 11 11	20 10 10 10 10 10 10 10	20 70 50 30 T 40 1	Frant go 300 100 110 120 120	モモモモモモモアレイ	7.57.8 0 10 afr far 26.	191917720 H 10 77	g 10 Demonena Guncef St S 10	80 170 1110 1110 20
6 9 17 40 80 1201 9 26	6 9 19 90 80 1205 9 26	in the second se	Jami, 9 et 9 (9) 9 (9) 9) 9 (9) 9) 9) 9) 9) 9 (9) 9 (9) 9 (9) 9 (9) 9 (9) 9) 9 (9) 9 (9) 9) 9) 9 (9) 9) 9) 9 (9) 9) 9 (9) 9) 9 (9) 9) 9) 9 (9) 9) 9) 9 (9) 9) 9 () 9) 9) 9) 9) 9) 9) 9 () 9) 9) 9) 9) 9) 9) 9) 9) 9) 9	9 fi	unt:	10 11 に モバタ にた	20 100 10 10 100	2 40 7 8 30 40 50	Frank go 300 110 120 120 120 120	ここそこそこ 人口 い	7078010 attanto	191917720 H 10 77	g 10 <u>Demonena</u> Guicel St D 10 Dedacmana	80 110 1117 g.1 30
		1	Jamas 9 et 1 9	9 fil	unt:	10 11 に モバタ にた	20 100 10 10 100	2 40 7 8 3 40 3 7	Fourier go 100 110 120 120 120 110 120	モモモモモモモレイトナイ	7. 7. 7. 8. 9. 10 10 10 10 10 10 10 10 10 10 10 10 10	1980 47 20 H 10 T 28	g 10 <u>Demonena</u> Guicel St D 10 Dedacmana	80 110 1117 g.1 30
		1	Jama 9 et 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	9 fil	unt:	いいにたい にたげ	20 100 10 10 10 10 10 10	2 40 7 8 3 40 3 7	Fourier go 100 110 120 120 120 110 120	モモモモモモモレイトナイ	7. 7. 7. 8. 9. 10 10 10 10 10 10 10 10 10 10 10 10 10	いるながひる 16 ひて ひ こ	g 10 <u>Demonena</u> Guicel St D 10 Dedacmana	80 110 1117 g.1 30
		1	Jama 9 et 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	19 57 50 10 19 5 10 1 5 10 10 10 10 10 10 10 10 10 10 10 10 10	unt:	いいにをドア にたげい	20 20 20 20 20 20 20 20 20 20 20 20 20 2	2 40 7 8 3 1 6 7 8	Funter go 300 110 120 120 120 110 120 120	モモモモモモアレイサイ	7. 7. 8 9. 10 attanto att fur	19 18 1 4 7 20 1 10 27 28 22 26	g 10 <u>Demonena</u> Gunoef St S 10 Dedacenaria to uncefilo fi	80 110 1117 gl 30 1117 100
		1	Jama 9 et 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	19 57 50 10 19 5 10 1 5 10 10 10 10 10 10 10 10 10 10 10 10 10	unt:	いいにをドア にたげい	20 20 20 20 20 20 20 20 20 20 20 20 20 2	2 40 7 8 3 1 6 7 8	Funter go 300 110 120 120 120 110 120 120	モモモモモモアレイサイ	7. 7. 8 9. 10 attanto att fur	19 18 1 4 7 20 1 10 27 28 22 26	g 10 <u>Demonena</u> Gunoef St S 10 Dedacenaria to uncefilo fi	80 110 1117 gl 30 1117 100
	· · · · · · · · · · · · · · · · · · ·	1	Jama 9 et 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	19 57 50 10 19 5 10 1 5 10 10 10 10 10 10 10 10 10 10 10 10 10	unt:	いいにをドア にたげい	20 20 20 20 20 20 20 20 20 20 20 20 20 2	2 40 7 8 3 4 6 7 8	Funter go 300 110 120 120 120 110 120 120	モモモモモモアレイサイ	7. 7. 8 9. 10 attanto att fur	19 18 1 4 7 20 1 10 27 28 22 26	g 10 <u>Demonena</u> Gunoef St S 10 Dedacenaria to uncefilo fi	80 110 1117 gl 30 1117 100
		1	Jama 9 et 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	19 57 50 10 19 5 10 1 5 10 10 10 10 10 10 10 10 10 10 10 10 10	unt:	いいにをいて にたいい	20 20 20 20 20 20 20 20 20 20 20 20 20 2	2 40 7 8 3 4 6 7 8	Funter go 300 110 120 120 120 110 120 120	モモモモモモアレイサイ	7. 7. 8 9. 10 attanto att fur	19 18 1 4 7 20 1 10 27 28 22 26	g 10 <u>Demonena</u> Gunoef St S 10 Dedacenaria to uncefilo fi	80 110 1117 gl 30 1117 100
		1	Jama 9 et 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	19 57 50 10 19 5 10 1 5 10 10 10 10 10 10 10 10 10 10 10 10 10	unt:	いいにをいて にたいい	20 20 20 20 20 20 20 20 20 20 20 20 20 2	2 40 7 8 3 4 6 7 8	Funter go 300 110 120 120 120 110 120 120	モモモモモモアレイサイ	7. 7. 8 9. 10 attanto att fur	19 18 1 4 7 20 1 10 27 28 22 26	g 10 <u>Demonena</u> Gunoef St S 10 Dedacenaria to uncefilo fi	80 110 1117 gl 30 1117 100
		1	Jama 9 et 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	19 57 50 10 19 5 10 1 5 10 10 10 10 10 10 10 10 10 10 10 10 10	unt:	いいにをいて にたいい	20 20 20 20 20 20 20 20 20 20 20 20 20 2	2 40 7 8 3 4 6 7 8	Funter go 300 110 120 120 120 110 120 120	モモモモモモアレイサイ	7. 7. 8 9. 10 attanto att fur	19 18 1 4 7 20 1 10 27 28 22 26	g 10 <u>Demonena</u> Gunoef St S 10 Dedacenaria to uncefilo fi	80 110 1117 gl 30 1117 100
		1	Jama 9 et 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	19 57 50 10 19 5 10 1 5 10 10 10 10 10 10 10 10 10 10 10 10 10	unt:	いいにをいて にたいい	20 20 20 20 20 20 20 20 20 20 20 20 20 2	2 40 7 8 3 4 6 7 8	Funter go 300 110 120 120 120 110 120 120	モモモモモモアレイサイ	7. 7. 8 9 10 attanto att fur	19 18 1 4 7 20 1 10 27 28 22 26	g 10 <u>Demonena</u> Gunoef St S 10 Dedacenaria to uncefilo fi	80 110 1117 gl 30 1117 100
	A REAL PROPERTY AND A REAL	1	Jama 9 et 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	19 57 50 10 19 5 10 1 5 10 10 10 10 10 10 10 10 10 10 10 10 10	unt:	いいにをいて にたいい	20 20 20 20 20 20 20 20 20 20 20 20 20 2	2 40 7 8 3 4 6 7 8	Funter go 300 110 120 120 120 110 120 120	モモモモモモアレイサイ	7. 7. 8 9 10 attanto att fur	19 18 1 4 7 20 1 10 27 28 22 26	g 10 <u>Demonena</u> Gunoef St S 10 Dedacenaria to uncefilo fi	80 110 1117 gl 30 1117 100

pair fug 2 pair ginn ar 22 maipnet 22 er B 20 fin gilut anfint ar 14 remaner 14 er nep miter B 20 fai gint ounfoit mit meiber ar 168 remaner pi 148 er B 27 fanit 46 que er ar 1769 remaner 1982 gont tupig Lise 1007 mit pinn pair 205 miteber quefer ounfoit quintant ur mite cenour artepae.

24

en bat ut qualty also sunthern dat quis ppertat phie uslast, inter coeffe name bounder, et acterin tame sour rematiete name er ounthees oping tap agti pripapet or induced at top 21'007 and anothing sour ty et fait tap agti a tarattera tama ferit ountit min open ounthern reca for agnotar. Opher apprendi quinti, finaper capitala ferit.



रिश गावित्यावर्षे माराष्ट्रप्राण् मार्थेष्ठ त्ये प्राप्तार्थ. 'भगा आर्थे que bler मार्थेण त्यां के पुरुषित तो que bler प्राप्तार अर्थ प्राप्तार्थ कृत्राविक्षेत्र मार्थेण तो que ble, प्राप्तार वा विक्रम्प्राण को प्राप्तार्थ के मारावे कि मारावे मार्थ तो कि साराध्यार दि सार्थेण कि मार्थे - राज्यार कि मारावर्थ के द्वार्थ का साराध्यार दि सार्थेण कि मार्थे - राज्यार कि मारावर्थ, कर अत्यान क्रियुवर मार्थेण की की मारावर्थ के कि सिर्ट के प्राप्त द्वी का मारावर्थ की कि निवर्त्त की कि की की मारावर्थ के सिर्ट की कर

rorn facef fan mennta, fir milden facta mennta lugoff mil-pfacta menn camfertoff fir fan i onnorf generata uilig, mil fabarta ligter, captata orb def calue, milos camment miloneg: er ut be ellormoftentoff, milos antel ligtelif efenant.

b er apandu impærtef sete enuseuri.

ל שם קותו כוד איתולבוואי ושים מעוקדים כו נווט יווףש לוליווים igta.

f old pendershande mon en onsis orth rupen fub una igta.

t erna ermtamer suisp cioust ruput fue oualy agtic.

Luita ernitame miep al outh ugfit aiplite rupat. Luita te mtame miep ai thrig lie.

6 om rendemie rupper fine Lauf. 4

0 cana av เชโลยนด์ รุงกามมี เหมือน กรามรุงที.b.

6 epuna er mlör mien arupton av üge finnnat mitte. 4

Inap part pina ce mitamoe miou unegrop cu une rupto fub una igla.

twinif miane II romanig zz rful artike manie nami in munis i z zz in b z III in ne official or file on more nami in in anies z zz in b z III in ne official or file on more regiment in in anies z zz in b z III in materia i file fit milat II pz aftit in b ight of ze wiske zeing z III ut maripusor tenor anie ze ut on pian z II of ze wiske zeing z III ut maripusor tenor anie rate in tenor z plaing to we z aftit in bagel pot zz office 6 digs and I api fig z of the 6 y alema in z z z row fun i phane z zz milation with anie zz z mila 6 y out fam 1941 and ounsel proportaal if in his figure hum in z 2 z - 12 year ounded to fir mila z z z off III they oun i 1971 out my z z 40 puesta milanie ut mplepta or figure artichane.

The Siena Manuscript.

Ballastineines.

155

bufu buan qui remafire :. 100 buft bu frdeder. 10

Toto metal designation in the logical providence of the providence	distant and strain Actor
14 A	La
370	to Ba
Land Martin La Bay	+1
2 1 0 10 10 7)	10 10 106
	12 21 21 27
2593817	10 10 10 10 10 9
1 TT FT OT	2672871
DED DE DIOTE	17-6000
286826728	127600
	2010 2 2 2 7 8
10 10 10 10 10 10 10 ET	HIS IS I
Contract Manual Contractor and a second	उनेव के दें के वे के की
380778381	NO IN IN IN IN IN IN IN IN
15 4 4) 41 41 41 41 41 41 41 41 41 41	
161629923-1	0 0 10 10 10 10 10 10 10 10 10 10 10 10
1 5 5 6 2 5 9 5 10 10 10 10 10 10	0 10 10 10 10 10 10 10 10 10 10 10 10 10
and the second sec	

Abe quio & voluice inque filt barlet 100 init exgliplingtof mentes orthut secunditetious ofrit de barles in fineanni remäteri. feit pe 12 fütes. Nafi ese potiel et: soquisa bit buittos: prejet 12 autates i voest muna quaq: cuatate: recurd reform fuer bit, et remansfert et.

nes. b.a. unplictu .e. et fit emalig vern .b.e. verte.b.g. 5 fi afts. b. g. ceriteit fup pueri .a. facter linea. b. e. ents trigenu. a. b. b. rett angulum . qr quadrut lince. a.b. e quat dueb qua oratic linear . a. b. t. b. d. abte & infimt quabratogeon firzeget 1 17 erut 1 2 69 ques moust Ereitunea . b. a. quibiericus er unca . b.e. filies er alho. D.g. remanchut ; planes . a.e. fer fummo alto anteit fup matern extrat. It' bei zzyremanter set quour rabier acepe Tafta. D.g. fetq. D.f. in pileo g.f. eit eita tus afte minous et ut beet aper undens perabe unen .b. f. ma er futentes angtin retti qui e.ab.d. qr quabra tus hnee. v. f. equatur buobiquabrutis mean .f. b.a.b. h qui quadrati . f. 1051 et 11's in funt inets facutivery qu mour. f Ey elmea. b. f. que e equat alte. b. a. ut opter. n quenta plane; oue turrer que una e alta paffibre a altera yo et duftat in felo palfits foin fra qe e fonç abe centura uelutat due aues pai nolatu defoenontes pante er altitudine og alenn die giaru quet deftantia centre abutrag: turche stags mare turris linea. a.b. mme fit. g. b. fpatin quod est in ter caç e unea . b. b. a coplene fu matarer east a lines. a. g. que binidat in due equa fi puctum.e. ag protrabat unes. e.f. com biltag unes.s. b. er. g. b. et apune. e. prabat unes. e. e. faciençãotor rector fup times . a.g. bico or puctus .g. e centru fontis or phabie ita perahane apiete g. buerecte q fint. g.a. et.g. g. que ¿ nolatuçani queç oftenda ce equaleç ga lines. g. a. e fubrenter angine rectu m triangle. g. a. e. 100000 eus musequat duobsquadus bneau. e.e.a. fimile quabratus lince . c. g. e equalic dueb: quatris linear .g. e. et. e. g. f. g. e equaliq. e. a. et quabratus hace. e. g. e co munic i predrig ouob: trigois . qr. g. c. et. a. c. fut equera bee uelum fif leon num procede uig abte paffing utri geworist. to a to erit 70 quoy dimidia tzy Fimen .e.f. na edimidia fpatti b. b. e = 4 quebe qube uncon b.b. 9. F. D. et accupe duffentia que e amineu to

200

207a

The Florence Manuscript.

unpir lik Aban Compilirus alconardo filio bonary portano. In

RIASISTIS nubi de un acquitter stichael forte fü me pludoiaple. De libri te uno que oudi copular nos enters seré Unde une oblectione pollularia i por fubrilion pleriaria magne sourie lonoré et alice infroe utilitatie corres. In camé correctié que sam necellaria acdres er épasse fupflas reteams i pla lita parlanticie des . Et que artimetrica i geometria facenti aff connex. Et fuffragatone fils ao tuné non prest te não plena come or rema mé interferante geometrica que di une ao geometria ficentia fi connex. Et fuffragatone fils ao tuné non prest te não plena come or rema mé interferante geometrica que di une ao geometria ficentina ante hos en une a modu una o pareir que di une ao geometria ficentina i alie horo que repareirea formetrice lompina cometria ficentina a neme plena equalitationale que figura geometrica filse. Defin a lie horo que repareirea formetrice lompina cometrica probar contente plum copacho coplacam fragula telescente aproducion has geometrices cometrico. O ane incluse magna de magna

pil. mi .rb fries wit a p ai bul fae pines bit farenohum ejourer os mune tala tee O D ano buttio i ei pinto pfait qu'fai p bint als ihabit mempia vitelleer abes serten el manibs effentis qu'ai une i pulla nandien i une neste i liberi des ce pômacumir slonen rene en fuir delapis baberedent sleart gelan peur ad pretten ben faale pue hare. Er un fasilios parer bercha te liber p. ev. diffires capila: un gogo 8 his lecros notatio ni indire ferre faile ope reput thaffinders al offert illud embories are fabiero. e gennen mit apara public fenba i duana bugte p pelante meareibs ad eas offmentes offittute peer me i puerta men abfe uent finnes ifpetta utiliunte e comediance fattin de me feudie abbag palige dies four nolaire abore. sebi comundula mageifije i arte p none figuras i ter i treduceus: foia artis i rin in jurche planne fitellegi adilla qo qoqo finochar even ap egypti, feria, gross halia tous nă că fluans modus. ad ș loca negocianois tă pea pagran y mlea fenduă e difonen tiers didiet officetie fell weit of calgorithmi ante are pieroger of energi opinitation refiper tu mode i ben. Ar aplettes finete upm modi unden a attet findes mes cepps fenfit gon aborn a gon é cefubulitante endidas gueracia arus apones famà bai libu e m ell'ophili poun i-ev-capite dathiere opene laboram fere à gifui eta phanik elitere.m onte plure ferrie mo hat fear oppreres ilmant o ges lanna beere fit barten abig ula umme ineine gupfete mun aur pl'aufte uf neeflage irmun, in bien ibulgeneur. neme fir q maio carcas vieiba indiqu fur confect Ceplicit ylar fucipair capata. comunic none figurarit ynter ranalie at ets nus farbat og nut ralie a mi tebene i mambe. . S'mmooneneibe abban.) e maluplicanse mogras mies. addunde wer abiunce.

Title a sufficient (- mpni) mmm - mmm

Constant Same Algorismi, scomeria. Inres Bies Designatur num 24 De cettactice mnou nicou cemanoubup. De pontione i tegran nicop permetegrar. De mlreplacatione integran micon en ruptie ates rupter fille famo. De architice ac extractice rounfice micon in tegran en ruptie atespontin micoum infingulus partile reductione. De emptice et venositie reru netalui et finn lum.

De basacre revi umalui 7 ce emprice lolfonalie er goutoar regulio

De foretunto fito mear conforta-

De confolamine monetan acque con regulio : q ao cololamen priner. De folinicilo infran polinan giftioni qo erraticos appellaning. De regla el catavim quali p ipam fere omo erratico giftioner foliaje. De replemiso invicilo quaviatio er cubirio ex infriplicatico er oun fico fen extinente can i le reversatulioner eristico recorrao nave de la guernoil geometermento refinoilo abetico almuchabele implicapili. De journo figure arcount de finte.

Tem bis unge nouë figuïs. ven bigno o ep arabue pephan appliatifenter que labs mis ur iten Smöltme 'la aus è unatarii piula collecto fine corregato anacatti q pfuer iufimuit afeithe gelas. Esgles par ecumutanto à fue abitro aufor moccè often Scos eccenns à fuit abesé une feitu fue cert fue excetturs à fair acèth alge imalle. Casaré fir cemillents à fuit amilie tils moccè milas rife fair acèth alge imalle. Casaré fir cemillents à fuit amilie tils moccè milas rife fair acèth alge imalle. Casaré fir cemillents à fuit amilie tils moccè milas rife fair acèth alge imalle. Casaré fir cemillents à fuit amilie tils moccè milas rife fair acèth alge inclue obstern. Scos do dius faultas faultas faultas faultas faites empsice mise mapie abstern. Scos do dius faultas faultas faultas gentes prim grato mbet empsice mise mapie abstern. Scos do dius faultas faultas faultas faultas gratas fequeur. Casaré, étaum 7 quitas, quarrii, 16mp lie úlas faultas faultas gratas para fequeur. I figura unatare ambas reput grada fe mam replements là é fa mômo gradat fuite figura unatares una réference fabrarat. cas fariant, choran p es dané à fectiour, also facuerant, noué, figure quite à unico grata hinte cet tea nas replemine quot unjono unitate? Is ste la fagura unitates com cemper grata. Superno tecé, fabranant angie. Is than ungites farouserant nousester.

The Florence Manuscript.

opend provents

1 8446

108

140

108

1814

1 1.0

#1084

715

2

31 22

っち

うぎ マリ

gh ap a

1084

TRY



bunbede nut mentoie ruiny dauffer unfderent fear tappin air abarti ge com nf wil fab tita figh abuint. e un flate nuis p frie sines junte pete. Ce ur m alligabili g dian hirrindli grannimen af mill oftenhend. Dianto & 1 8 + 9 + 17. Af ushit danie i a eve giv Blan iv hib vedesevensempatit iv Sis gint nme due fige dandela mit ge i nyemanene i nyene i fale a Supil i s nemanig pair frie un i pins blande ettedat, Er appler viz) al asterber fign. f. al et att is of is ai must fit dourfore mile. f. 3 17 poor a fabrief of the aligned i fab s geoplibuls or al anachte fight an y fand or y pier may fab demi y sale fight arbords of p 17 millions factor fore bit 11 7 mil un ufg arbuild, comm biarar uthat boundere mit las 1 7 au benane mit gemies 6. 6 é genien zo bundar é du er spit og far for bir o nimfr fur figt digt bys mmander : bing vor relange um pina figit if er yol o remandet er a damtar y ba er calit o out bely a figit quà beby pond ful of t i apli f.s eti ougut qui o mini go's o un maior page אורי אל בסלמול נוחנו א לום ישורי אול ונותו אוליו איוולג אווו עווי אווי אווי איווי איווי איויי איווי איויי ber milom giege Bir o offie fie. mili mag a galmmit figit vi vol. pund er a fee ihat Virt mentendibie grader fer vir er englie mit o en anadere o fante og valer edlur miton mitte labifigh # 17 4.17 finlinte 6 ve minnt 39 tot umant V in y ceiten in mfintle V & f 19 ú f fu Vilpate ofteidet, pair ungin filge apla mit Enderbin fight. e. al & fanile a shall lab a gin rale fight gentham par fan ap apone 800 View laar of he dalight telift o 8 00 yemanima odunder pe lat anta fearm. I I' eabe te e gir pain o be apill & te flab & be i jene gdu con

af nuñ - runlfe y a v y v v v C y ulterna figli ginn fande v e eritar v e egyeines fe'r renard e e pole ffrydd og wyddi yn yni arlendrafy e e e af dyn ana cryfau rul o fande e v Sigig eilor ullefen V eff v I o bê y stanonolô o renanalê (dyale fi'r ogaar, faanf farsign, o gealañ mij, fer os y gir an rjderfie bôleg (f 102 v gaffan daarfiek ar anbar alarna Vefetarer oldedaf.

perfut fi azi i s $p \neq q$ $p \neq 0$ dan dö no halfer ötldan i o fad yo öt i s et yölör par fuder i i s r milé hájd á milinar i o fannar för i på i s et ä äft fint atör må af i or dan må agfad, i för milé hájd á milinar i o fannar för i på i s et ä äft fint atör må af i or dan må agfad, i för ä minnär et ö i på i s er romanikt i s á dan atnik go p i 3 i o et o ä ötigar ötse tima mör o å på ti ö er an filte við a er finnar för yör öt i för at öt ötigar ötse ötse äför i minnar är i s gan filte s fint er finnar ötigar og ötigar ötse i för ötigar ötse tima mör o å på o för s eran filte s af er för er finnar ötigar ötigar ötigar ötigar ötigar ötigar äför i minnar är i s på o sör ötigar för ore for ötigar ötigar ötigar ötigar ötigar ötigar äför i minnar är s o sör ötigar o fannar i s e i för ötigar og för ötigar exopfalt e a ä of fannar ötigar öti

14b

The Florence Manuscript.

분옥

arbino

centano

てかり

ander

It't Etty

922 danie

1274 1 2000

22.52

717

Wen an quicking mine fairs filled at high scores of repering addy miles an quicking mine fairs filled at high scores of repering addy rollin al fairs more at score of high scores and a fair strument fail fairs of a score bay so that the score fairs of the score fair of a flag manual. As for all the manual fair fills of fairs of the score fairs of relif. As

likerst minnen junt fast minnen. Er mit fel minnen fogsørt mit plaan mannan i farti Geffind dootef plannen udat, mit februar light Componenterbill dag mit minnalminnen udatmeig. Er spærb alterbole minn mit som digtelade oftendari. Derspendens uspenet om danderred.

Ingi jene di eluitade milai integraci al ono trapo fabuna heli.
 Ca violado milazo didadej e ruly mprof tido ma lagria.
 Ca violande milato di dadej e ruly mprof tido ma lagria.
 Canto dedicato milato e un diadej e ruly input fab cinato umpalato
 Input dedicato milato e un diadej e un diadej e ruly informationale e un diadej e

Opmar Sinthande miliel e papeninganet une formann formanie Judie A. Justipe parties O sama Sinthanie prime monarce e upped formulapiene of names congress and partial milieures characterizer with an experiment for any state of the second and the second and the second of the second seco

" unt out fontampte

27

き11

7240

bin. Bi al mir sinadami fin lind parame neußen. Er depend heine mainende indigenende fam. Tradicio in alti meliai mirani inpi si i a ser pripis tig ve dipist. Miranie formphi inne mirandi exclution stada. Ern danie do dipist fin une fin alti india in firm di terretale della india de program depisi dire line. E findari dalla i gre di se productade in depis di antici da si divisi dire dine. E findari dalla i gre di se productade di antici da si divisi dire dine di compti di se productade di antici da si divisi di se di compti nella se di se programa alla si da si interi di antico di compti nella si di compti dine endensi sepe di disendare i antico dalla di compti di compti di compti di se di se di si di di si luft que ff cod for a Sadaus op e calie que pa er aut dans per ca le e que pa caful a labrequie de mais de partieut dans per ca le e que pa caful a labrequie de mais de partieut dans per ca le e que partieur proglas de cabé de la dis de capes arbiellèdie, ambie : defte present de partie de partieur calie de capes arbiellèdie, le pinde de le provincipal de cabé de la cale de capes arbiellèdie, le pinde de le provincipal de cabé de la cale de cambiel de cabé cale de provincipal de cabé de cabé de la cale de cambiel de cabé la dis de cabé de cabé de cabé de cabé de camerador de cabé de cale de cabé de cabé de cabé de cabé de camerador de cabé de la dis de cabé de cabé de cabé de cabé de camerador de cabé de la dis de cabé de cabé de cabé de cabé de camerador de cabé de ca

Judaif adde \pm ai \pm auf $\delta = \pm$ \pm iğnio repát syle mö ole min nind nuaç iş inb igut nind \pm p_{1} ig \pm q_{2} ei + o ole min oninar pia is i ibir alqui add \pm p_{1} ig + q_{2} + q_{2} of e min oninar pia is i ibir alqui add \pm p_{2} if + o of e min 0 silarat pia ibir alqui add \pm p_{2} is a min a, a is q_{2} + o of e min 0 silarat pia ibir alqui add \pm p_{2} is a min a, a is q_{2} + o a of e min a silarat pia ibir alqui add \pm p_{2} + a is a silar being a of e min a solution a silarat pia a silar alqui a de e min a solution a is a silar being \pm a solution a solution a solution a solution a is a silar being \pm a solution a solution

Sinot ver fere nohill apoel picpen er vere geefe nohil madu bidaobi picpul madi gerte er e sen temande er flap picpun te dants g to te cule to prefeduo date eresig. Er fin 195 dants auf dants er 975 ter enbe to flap from gerte dantst feb to per beig mag pu redantie to met ur mede offeder, do eno be to te

w ve en fi nolin a defe $\frac{1}{2}$ al $\frac{1}{2}$ reput nulls ma represent napn eings a to a decime eventile anna misch of the dight of reput in mussee mile of a little dight of reput $\frac{1}{2}$ in reade $\frac{1}{2}$ $\frac{1}$

27b

The Riccardiana Manuscript.

134

Oglono due lafenpio alaoren regla enogio one du n'i inguane na giono q' corrone fe que naionno gle "nue puane dere fare douti mlidure - frate q defon no 3 q epune pipo denemene cenare n'i econti fale femeglante pragrone.

Cre fosse or ca alchuna tagione nellaquaie fessones le ne dose contana cele core pare conange anesse inc to froenemo sape enque numero semiona quasto ne to faputo enque uno quasto mero froenemo milcare ame coro epare conanze prate milo enque semiona qu lo neto.

Solono vane lasepio ala victa regla enoglo vine den fi baata 9 ± vepanno naglono 1- v que ne nänonno gle q bana veretare denfi redere afano p quillo vero de reço el viz fiave 9 ± de fanno 17 baata oze nemo one 7 fiave 1- venare de fanno que nena vos venemo one 77 baata cepanno naglono 41 vena 10 que ne nänonno gle q baata freenemo mliane 4 fi ave 91 venaro de fonno 7 94 venare apartie p17 dene mene venare 10 £ verenaro ozaremo de fe baata 9 ± revanno naglos or - v de nengo 10 gle 4 baata vera ni unogle faje quanto veie pagae doutine done ne el + mete fidenemo milidane co fina lo t requillo nuo epittite em quoi z 6 tutta ma ve ne ene quato panevore everete milidate foo p lo quatto panevore dollo comore dollo + e puote dollo s epuote dollo comore dollo + e puote dollo s epuote dollo comore dollo + primo filo va quatto ve v.

= 173

121.

121

renco 100 0 8 916126	er p.
quarto F6 09 410120	-0.20
auntor Pie lierte	
Com PEDIO TO STER	- 6 30-
fenio fe or Ewalit	25.
attandfu to The att	です-
nana' 6- 54 1196	で つ.
10102	70 5.
reamort ou gieize	
undamofi Societo	2.5.
onoamofi 5 gieito	Te t. coefama lan.

Onno defe fare una nane Sa

Almme quifta tagione uno fe fare una naue aune trouato uno matefito de otde defarda es o ot adotale patro dettatatino ot delanoza dete ane 54 eglor de nolanozia dete fede p'entro atignoze 50 auene de tante otla nozo etante flerte denolanozo de no deneta ane mente eno denea rende mente floora ore quare ot flette denolanozo equare la nozo. Quinta e lafua regla domo fepuo fa pe denote cenemo agrogne 54 dom 5

The Riccardiana Manuscript.

140

p = defa pa la colotanto unoglem tutto quitto toton co epquisto mo do puose faretutte quitte ragione eturna una pigla egle 7 ceturna la forma cagiongne fopze do Ditto auemo ceuante.

Fine fosse ditto euno wtonto del simo di ametro ene la 10 enoie uolessemo sape q te la qua dae fosse ano sapendo quillo de noglesse centoano qui sue la fina wegla de denemo mil datte 10 ma 10 de fa 100 la cellequagle la 10 cenemo abatte gle de tono 2 71 orcenemo mue cebia 100 quisto 2 71 orcenemo mue cebia 100 quisto 2 71 ereman ba 7.8 edoti te bia qua die sime tutte lesemegla te mgione que tiste tusae quillo de p lodiametro cemeco milida ecelasoma a latte gle in eueratte aponto.

Enefosse ditto euno netonto chenogle de tomo b277 unte neuoglo fare q' recorde etaje quaro noglea cascuno pse. quista ene lasua regla chenore denemo pigla e lamita de b277 che 11 the educanto nogle m ciascuno cequiste q' etutta una pare la soma pineco ecloranto noglera p quaro. Selanolemo prouare sidenemo sape qua te la quadre sim ciascuno enquisto modo de denemo sape lo Diametro lozo tonqua de cenemo sape lo Diametro lozo tonqua de cenemo partre b211 p = 2 chenomene = 7 echo tunto el suo diametro cemeço mo

in all appendix

Selauolemo pronare ficenemo michare lalagra voltume premereno coucit matiz defa big 196 modenemo mudane lorgo delarbase cour & o una a o defu a so colquagte agrongue emfreme cho be 9196 te efara biog 49' teglquagte tenemo trouare lafua moige de gil domo uole effere echufi falefemeglante mgioc apoto, Eucfolle onto de uno arbora alto be enno finme capiere delatioze e dio noglo po ne una faula ala ama relatore alaproma telfume acomatore quato fina largo elfi ume equato fina larga laschala aponto.qui Atelafua regla que denoro denemo pigla relatagen relatore na arbit 12 cli de bit 8 egrogue topza abi q 29 efam bi

hela cultur top

My Leonardo books



New York: Walker & Co.



e-book original



