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- Peat geologist
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LAND OF BEGINNINGS

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1. Late 16th century a transformational period in the sciences, business and global exploration

2. Underwhelming early North American colonization limited Crown support forcing greater reliance on skeptical private capital

3. Ralegh used “science” expertise to enhance credibility of Roanoke Colony business plan

4. This strategy proved a “double bladed sword”
LATE 16TH CENTURY EUROPE

Modern Capitalism

Age of Discovery

Scientific Revolution
HIGH NEW WORLD EXPECTATIONS

Early 16th century success of court-supported Spain and Portugal's exploration in Central and South America spurred rival interests in trade, botanicals and precious metals.
NORTH AMERICA SPECULATIONS

- Northwest Passage
- Markets for goods
- Precious metals and commodities
- Botanicals
- Piracy/privateering
Early North America explorations by English and French had similar support...but a lack of financial success soon curbed their royal enthusiasms.

Maritime entrepreneurs turned to private investors.

*Henry VII of England and Francis I of France*
While illegal "privateering" established as a lucrative speculative investment.

Francis Drake’s 1577-80 circumnavigation seized Spanish prize ships.

Drake produced a 47X return for his investors.
COLONIZATION BEAR MARKET

1542: Cartier @ Cap-Rouge (Fr)
1565: Ribault @ Fort Caroline (Fr)
1578: Frobisher @ Meta Incognita (En)
1583: Gilbert @ Norembega (En)

Bad science and information control
- Much loss of lives and capital
- Many investor lawsuits
- Weak joint stock company structure
- Pessimistic capital markets
CONTRASTING RISK/REWARD CURVES

PRIVATEERING

COLONIZATION

RISK

REWARD
SIR WALTER RALEGH (c. 1552–1618)

English courtier, soldier, pirate, poet

- promoted English exploration and settlement in the New World
- Oxford educated with lifelong interest in science.
- Developed network of scientific advisors and kept a laboratory even in Tower of London.
JANUARY 1584 – RALEIGH’S OPPORTUNITY

Walter Raleigh received exclusive “patent” to establish the first English colony in North America. He needed capital but faced skeptical investors with attractive market alternatives.
Self-financed £2,000 for a 1584 reconnaissance mission.

On its return he needed to quickly raise £10,000 to proceed.
PROSPECTIVE INVESTORS

Queen, Privy Council, Gentry

- Strategic investors who sought financial and long-term political returns

Merchant Adventurers

- “Merchant capitalists” traders motivated by familiar, short term results
1. North West Passage
2. Markets for English goods
3. Valuable commodities
4. Basis and base for privateering
New manuscript and archaeology show Ralegh enhanced investors’ E[R] using science to increase credible ROI scenarios.
RALEIGH’S PHASED COLONIZATION PLAN

- 1584: Amadas/Barlowe reconnaissance mission to prospective colony locations
- 1585: “First Colony” year long exploration to identify site for future permanent settlement
- 1586: Resupply and soldier/settler rotation
- 1587 +: resupply and expand permanent colony as the “Cittie of Raleigh”
RALEGH’S VENTURE CAPITAL STAGES

- 1584
  - Reconnaissance £ 2,000
- 1585-86
  - Exploration Colony £ 9,580
- 1587+
  - Cittie of Raleigh Colony £ 6,000
- Planned Permanent Colony £ ??????
Bend investors’ Risk/Reward curve in favor of Roanoke Colony with the lever of Science.
ROANOKE’S “BLUE RIBBON SCIENCE TEAM”

- Navigation
- Metallurgy
- Botany
- Linguistics
- Cartography
- Apothecary
- Physician
- Surgeon
DR. JOHN DEE (c. 1527–1609)

- English mathematician, astronomer, astrologer, cartographer
- Advocate and adviser to English exploration
- Resident in Prague in 1583-89
JOACHIM GANS (c. 1550 – ?)

- Metallurgist, native of Prague and Jew
- Advised English mining and smelting companies
- Translated Ercker’s treatise on metallurgy
- Likely agent of Sir Francis Walsingham
THOMAS HARIOT (c. 1560–1621)

- English mathematician, astronomer, linguist, and experimental scientist
- Oxford graduate
- Raleigh science team leader and chronicler of outcomes
- Correspondent with Johannes Kepler in Prague
JOHN WHITE (c. 1540– c. 1603)

- Artist and cartographer
- Illustrated research findings
- Mapped areas of exploration
- Later Governor of attempted permanent colony (1587)
Members of two different tribes - the Secotan and the Roanoke

Selected by their chiefs to travel to London in 1584 to learn about the English

Returned with the 1585 First Colony with very different perspectives
Kent archive - 1585 Roanoke Colony prospectus specifying

- “A Barke of 50 Tonnes” to “Transporte 40 men whereof 30 to remaine”
- Personnel, equipment, and supplies
- “Expert” validated commercial opportunities
“MERCHANDABLE COMODITEIES”

“Wee have allredie by manefold Wayes Learened and to be in Wyngandacoia”

- Gold, copper, naval stores
- Botanicals with “effects in Phisicke, other some in Chaurgerie
Guaiacam
Therootte China
Orres
Turmanack
Colloquintida
Brassell
Mastick
Ollybaun
Aloes Cicatrine
Cumamnia

Salsapruilla
Callomus aromatiais
Ruberrb
Agaricke
Ledoaria
Saunders
Cotton
Zednaria or setwell

Cohenile
India blewe
Teria Samia
Beniamyn
Sene leaues
Tackamachaca
Cocolus India
Galinga
Cantarides
EXETER INVESTORS - JANUARY 1585

“At this Court there were certain Articles .... by Mr. Carew Raleigh touching a planned voyage to Wyngandacoia and a note of the merchantable and other commodities there found...

Whereunto the Company did answer that as they were adventurers already with Mr. Adrian Gilbert in a voyage unto China they will not adventure any more in any such voyages until they see that voyage ended or some success thereof.”
By April 1585, Raleigh had raised £10,000

- Seven ships carrying approximately 600 men.
- 108 men were settled on Roanoke Island for a year.
- Research team of 15 to 20 members
1. Celestial navigation
2. Exploration/cartography
3. Ethnography/linguistics
4. Geological/biological inventory
5. Commodities assessment
6. Site evaluation for future capital “Cittie of Raleigh”
CELESTIAL NAVIGATION
Gans and his “mineral men” searched for ores and tested copper used by natives

- Archaeologists found evidence of assaying and metallurgical testing research on Roanoke Island
Organic chemistry

Distillation apparatus excavated at Roanoke “Science Center”

Reports by Roanoke apothecaries confirmed presence of numerous pharmacological compounds

- Ralegh maintained lucrative monopoly on imports of sassafras through 1603
KNOWLEDGE IS POWER, BUT SECRECY IS CONTROL

Early modern “Knowledge economy”

“Scientific knowledge and economic needs in the 16th century existed in a reciprocal relationship”

- Dr. Stephen Clucas, Birkbeck College, University of London
BALANCING DISCLOSURE AND SECRECY
“Two more commodities of great value...I might have specified. So likewise of those commodities already set downe I might have said more, as of the particular places where they are found. But because others than welwillers might bee therewithal acquainted, not to the good of the action, I have wittingly omitted them, knowing that to those that are well disposed I have uttered sufficient”
LA VIRGINEA PARS

- East coast of North America from Chesapeake bay to Cape Lookout
- 1585-87 by John White and Thomas Harriot
- Brown ink and watercolor over graphite on paper
- 478 mm x 235 mm
- Scale: 1:790000
“CITTIE OF RALEIGH”? 

THE BRITISH MUSEUM
IN CONFIDENCE

DEPARTMENT OF CONSERVATION AND SCIENTIFIC RESEARCH
Examination of patches on a map of the east coast of North America by John White ("La Virginea Pars"; 1906,0509.1.3)
CSR ANALYTICAL REQUEST NO. AR2012-21
Externally, alienated elite colonists spread disparaging rumors in England.

Internally, credible findings underwhelmed investors.

1587 - minimal “permanent” colony to maintain patent.

Thin capitalization made vulnerable to externalities.
1585 - OPEN WAR, PRIVATEERING BOOM
SPANISH THREAT DIVERTED ATTENTION
1590 SECRET COLONY... LOST COLONY
NEW PERSPECTIVES, NEW INFO, RICHER STORY
The First Tech Venture?
Scientific Expertise and Financing the Roanoke Colony

Brent Lane
First Colony Foundation Symposium
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