

1219

VOYAGE OF
VIVALDI
BROTHERS
IN A GALLEY

1440

DEVELOPMENT OF
VOLTA DO MAR,
EXPLORING THE
WEST AFRICAN
COAST

1487

BARTOLOMEU
DIAS SETS ON
HIS JOURNEY

1497

VASCO DE GAMA SETS
OF IN A CARAVEL,
WITH A MAGNETIC
COMPASS AND
ASTROLABE

1498

DIFFICULTIES
WITH MUSLIM
MERCHANTS
IN INDIA

1502

EXERTION OF
MILITARY POWER
ON THE MUSLIM
MARITIME TRADETechnology and
Heterogeneous Engineering:

THE CASE OF PORTUGUESE EXPANSION

“The stability and form of artifacts should be seen as a function of the interaction of heterogeneous elements as these are shaped and assimilated into a network.”

- John Law



- FRAGILE SYSTEM
- SEMI RESILIENT SYSTEM
- RESILIENT SYSTEM
- FRAGILE ELEMENTS
- RESILIENT ELEMENTS

CURRENTS

WIND

VOLTA DO MAR

GALLEY

MIXED RIGGED VESSEL

CARAVEL

MAGNETIC COMPASS

GUNS

SPICES

ASTROLABE

REGIMENTO

QUADRANT

PORTUGUESE KING

SAILORS

MUSLIM TRADERS