Solingen Swords

Below is a collection of the computed properties of most of the swords covered in the "Solingen book". Refer to the backbone for details.

I'm indebted to **Peter Johnsson**, **Vincen Le Chevalier** and the "Deutsches Klingenmuseum Solingen" for allowing me to use their material.

Below I show you most of the swords investigated. For the meaning of the diagrams look here. The data contained in these diagrams have not yet been thoroughly evaluated.

I made a first attempt to do this by measuring the *angle* (in degree º) of the "rotation response cone" and the length of the longer axis of the "translation response ellipse". I used some of these data to produce some correlations between sword parameters; scroll down for that.

Note that the numbering of the swords in the book is on occasion a bit mixed up between the text and the graphics. Here I took the numbers from the text.
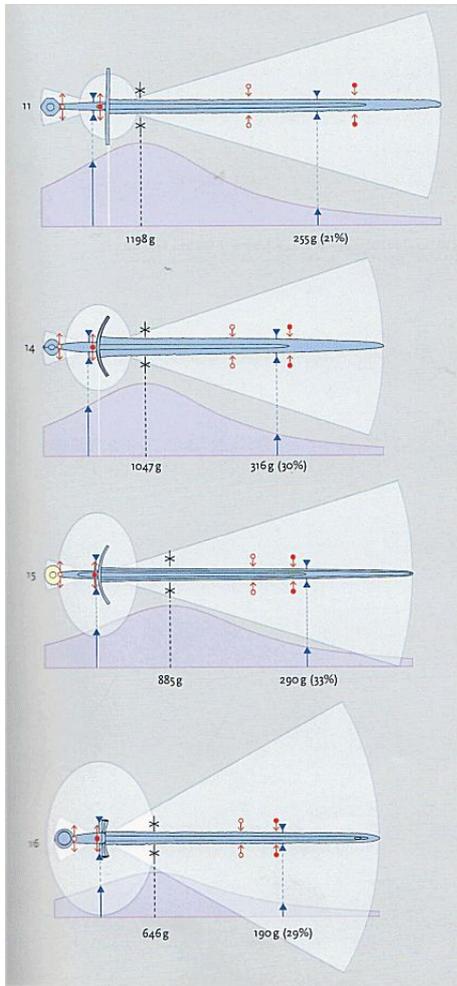
No. 11

"Sword" (a long sword, me thinks)
About 1150 - 1250
Found in a river

Length: 114 cm
Mass: 1198 g
Angle: 31,5
Ellipse: 15.5 mm

No. 14

"Sword"
About 1280 - 1310

Length: 97,0 cm
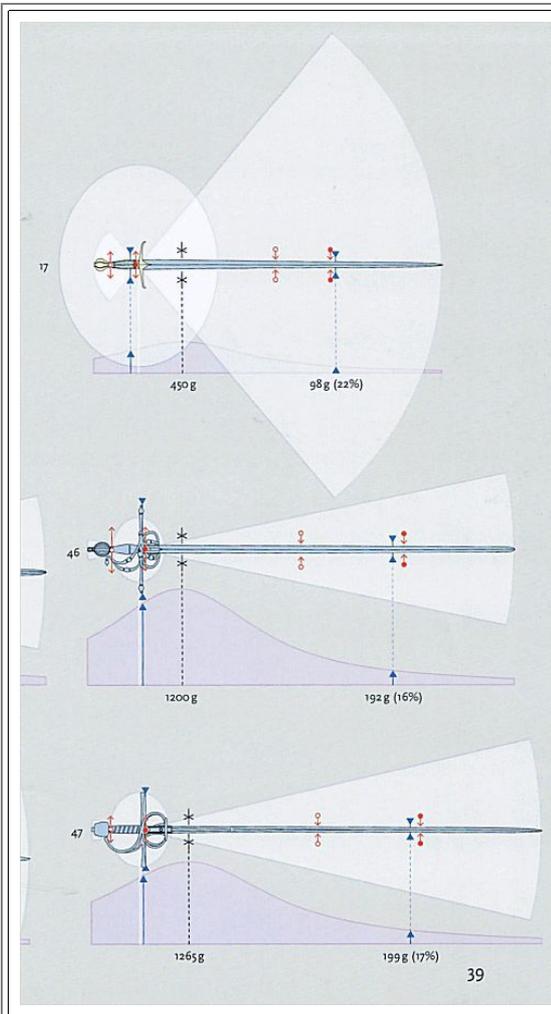Mass: 1047 g
Angle: 35
Ellipse: 20

No. 15

"Sword"
14th century

Length: 105 cm
Mass: 885 g
Angle: 38
Ellipse: 26

No. 16

"Sword"
14th century

Length: 92,6 cm
Mass: 646 g
Angle: 58
Ellipse: 36

No. 17

"Sword"
Late 15th century; Milano
A proto rapier for duelling

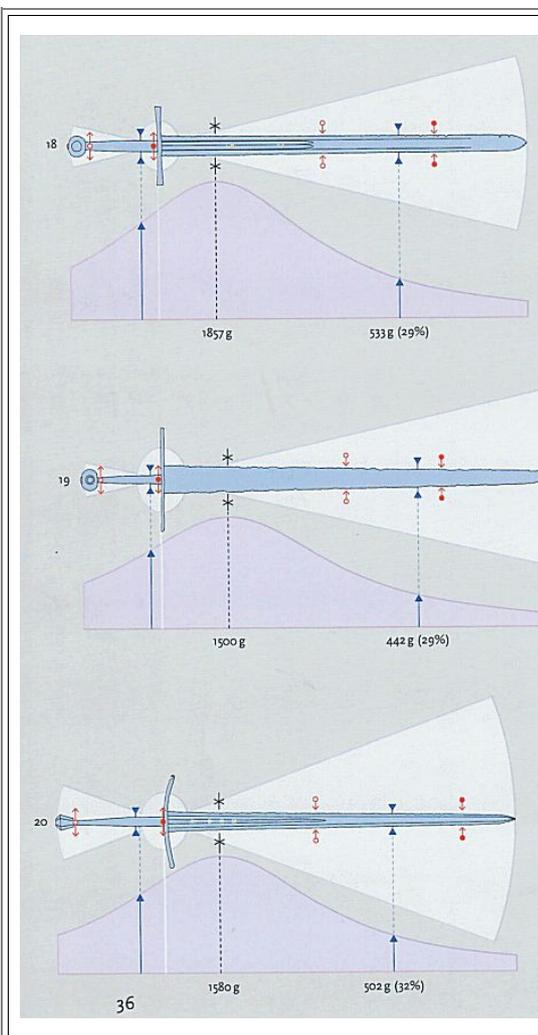Length: 98 cm
Mass: 450 g
Angle: 100
Ellipse: 47

No. 46

Rapier, last quarter 16th century

Length: 120 cm
Mass: 1349 g
Angle: 24
Ellipse: 15 mm

No. 47

Rapier
ca. 1600

Length: 126,5cm
Mass: 1265 g (1175 g ?)
Angle: 26
Ellipse: 17

No. 18

Bastard sword
Early 14th century

Length: 123 cm
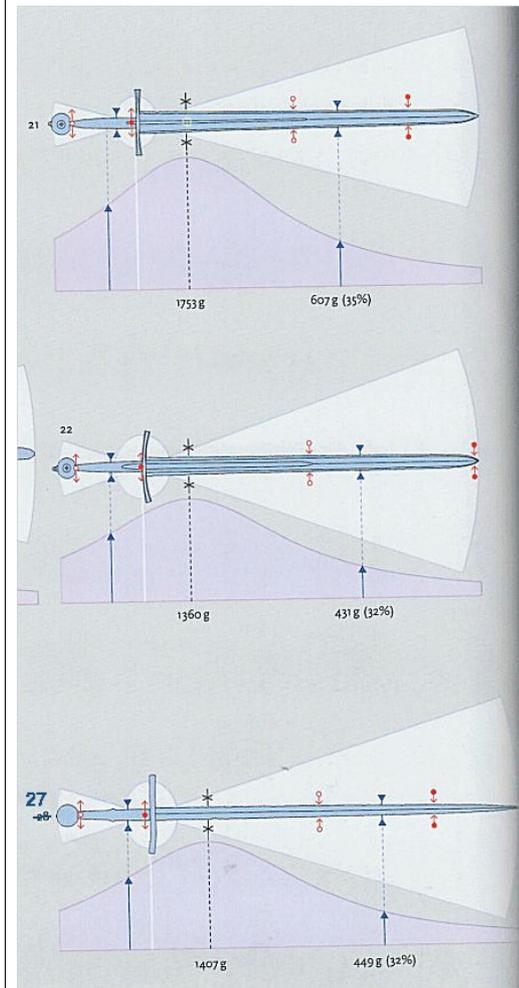Mass: 1857 g
Angle: 26

Ellipse: 11 mm

No. 19

Bastard Sword
ca. 1350

Length: 127 cm
Mass: 1500 g
Angle: 26
Ellipse: 14

No. 20

Two-hand swordbut rather short and light
Second half 15 th century

Length: 123,2 cm
Mass: 1580 g
Angle: 40
Ellipse: 13

No. 21

Bastard sword
1st half 14th century

Length: 113.4 cm
Mass: 1753 g
Angle: 30
Ellipse: 11

No. 22

Bastard sword
1st half 14th century
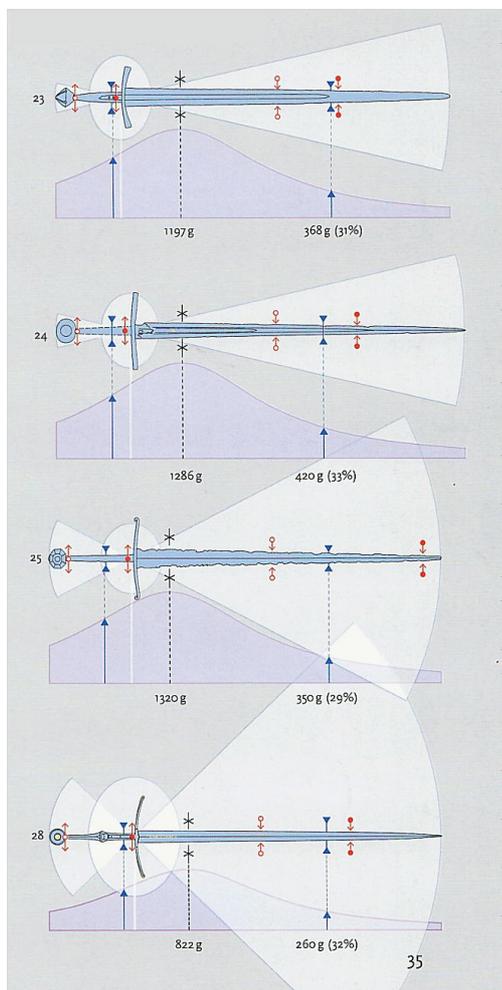
Length: 112 cm
Mass: 1360 g
Angle: 40
Ellipse: 14

No. 27

Hand-and-a-half sword
ca. 1425 - 1520

Length: 124 cm
Mass: 1407 g
Angle: 35
Ellipse: 15

No. 23

Hand-and-a-half sword
Middle 14th century

Length: 105,6 cm
Mass: 1197 g
Angle: 26

Ellipse: 19

No. 24

Hand-and-a-half sword
Around 1400

Length: 109,5 cm
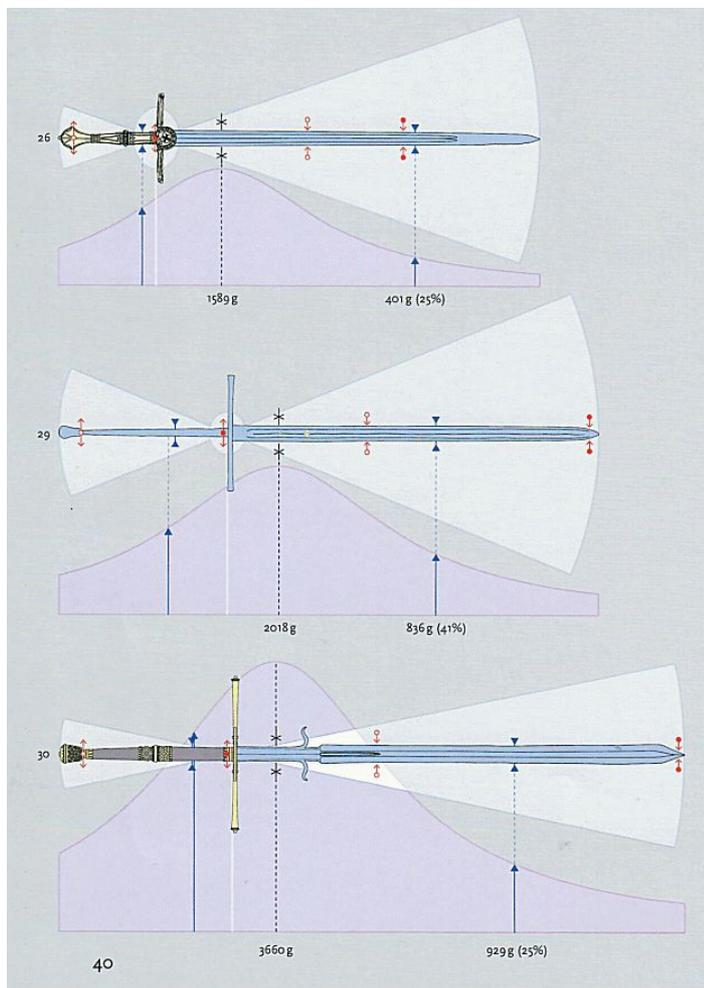Mass: 1286 g
Angle: 26
Ellipse: 17

No. 25

Bastard sword
2nd half 14th century

Length: 105 cm
Mass: 1320 g
Angle: 55
Ellipse: 16

No. 28

Hand-and-a-half
ca. 1480 - 1500

Length: 105 cm
Mass: 822 g
Angle: 89
Ellipse: 27 mm

No. 26

Two-hand sword of the
Archbishop of Cologne
1450 - 1460

Length: 130,6 cm
Mass: 1589 g
Angle: 37
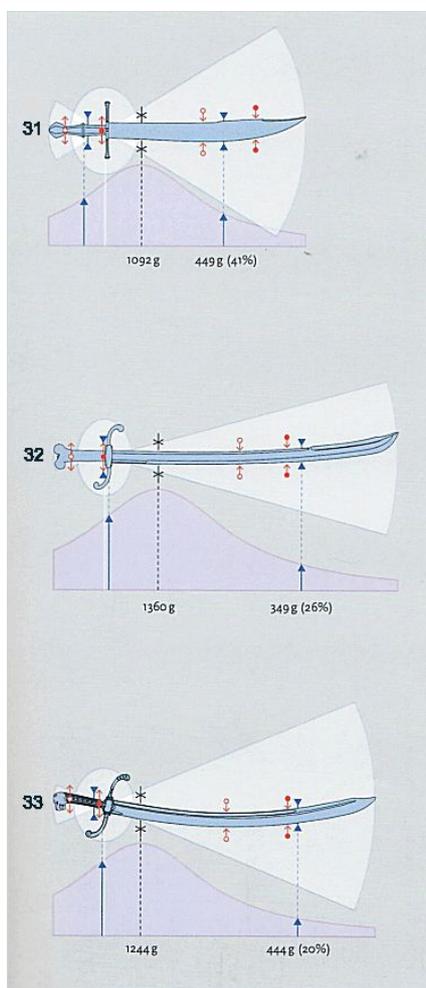Ellipse: 14 mm

No. 29

Two-hand sword
late 15th century

Length: 146.5 cm
Mass: 2018 g
Angle: 44
Ellipse: 9 mm

No. 30

Two-hand sword;
Solingen 1580

Length: 170 cm
Mass: 3660 g
Angle: 23
Ellipse: -

No. 31

Falchion, ca. 1500

Length: 69 cm
Mass: 1092 g
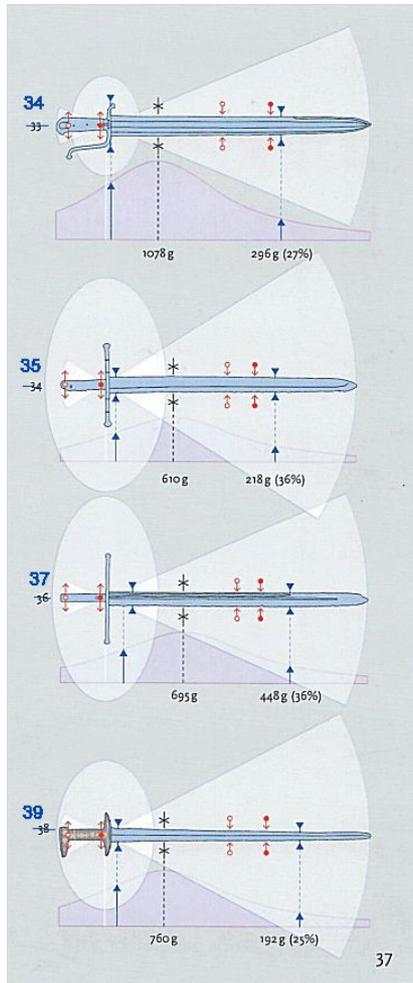Angle: 62

Ellipse: 19

No. 32

Sabre
Milano 1530

Length: 92,5 cm
Mass: 1360 g
Angle: 31
Ellipse: 17

No. 33

Sabre
End 16th century

Length: 86,5 cm
Mass: 1244 g
Angle: 44
Ellipse: 17

Note that the numbers in the book are off relative to the text (30, 31, 32 instead of 31, 32, 33). Here the numbers in the text are used

No. 34

Messer
Late 15th century

Length: 85 cm
Mass: 1078 g
Angle: 45
Ellipse: 22

No. 35

Messer, ca. 1500

Length: 80.2 cm
Mass: 610 g
Angle: 64
Ellipse: 58

No. 37

Messer
ca. 1500

Length: 83 cm
Mass: 695 g
Angle: 42
Ellipse: 57

No. 39

Baselard (? A baselard is a medieval dagger or short sword, rather like an ancient akinaka
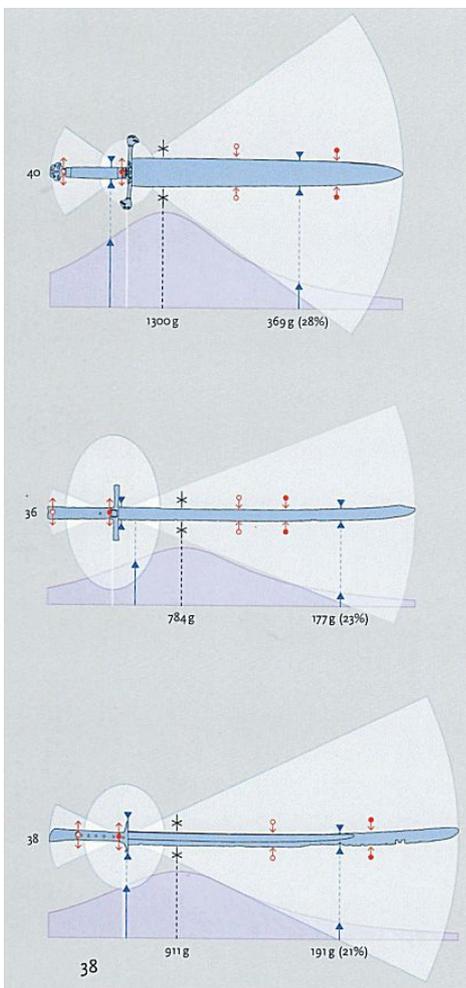
15th century
Length: 84.3 cm
Mass: 760 g
Angle: 56
Ellipse: 33

Note that the numbers in the book are off relative to the text (33 - 38 instead of 34 - 39) for the first two swords. Here the numbers in the text are used

No. 40

Single edged sword
Early 16th century

Length: 95,7 cm
Mass: 1300 g
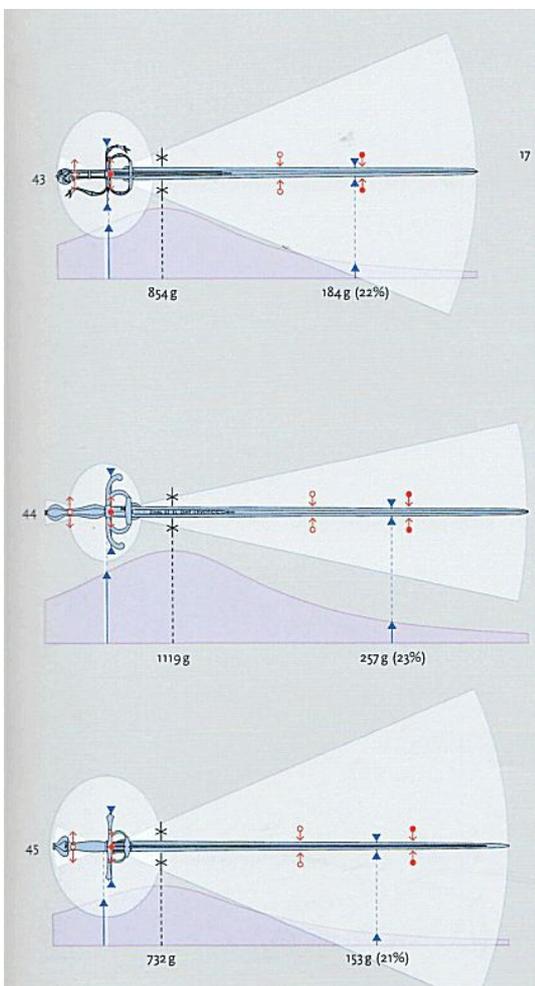Angle: 73
Ellipse: 15

No. 36

Messer late 15th century

Length: 100 cm
Mass: 784 g
Angle: 42
Ellipse: 35

No. 38

Messer,
ca. 1490

Length: 111 cm
Mass: 911 g
Angle: 51
Ellipse: 24

No. 43

Sidesword, 1550

Length: 101 cm
Mass: 845 g
Angle: 45
Ellipse: 28

No. 44

Sidesword (Degen)
Solingen, ca. 1600

Length: 116 cm
Mass: 1119 g
Angle: 25
Ellipse: 19

No. 45

Sidesword (Degen)
Middle 16th century

Length: 110 cm
Mass: 732 g
Angle: 48
Ellipse: 28

You can see that the "rotational agility" given by the size of the rotation response cone varies quite a bit, even between swords that are quite similar. It is of course tied to the different moments of intertie of the swords and thus to their mass and Length. Is there some correlation between these parameter?

That is easy to find out. Just measure the opening angle of the cones and plot it versus either the mass or the length. The results are shown below:

Relation between the mass of a sword and its rotational response

Relation between the length of a sword and its rotational response
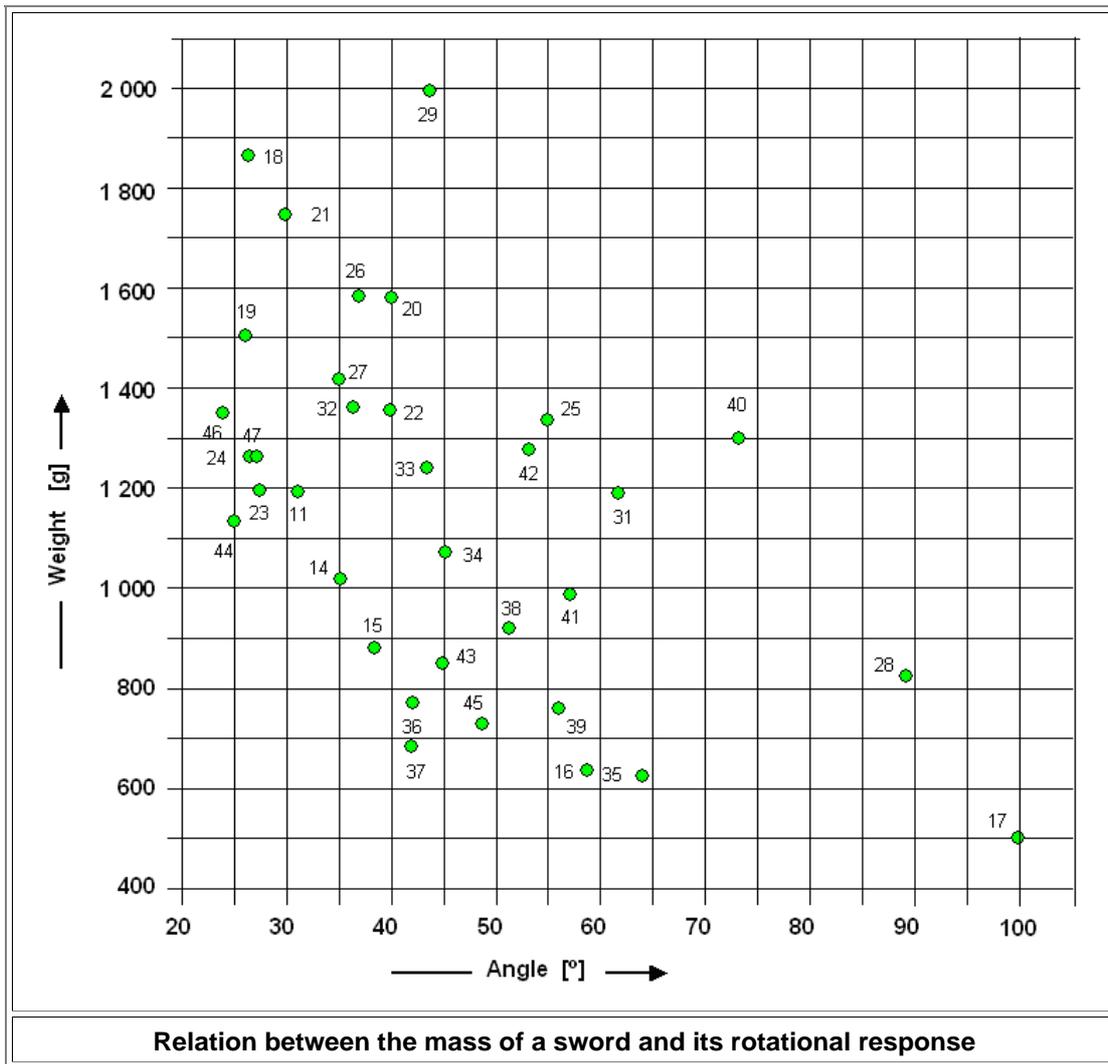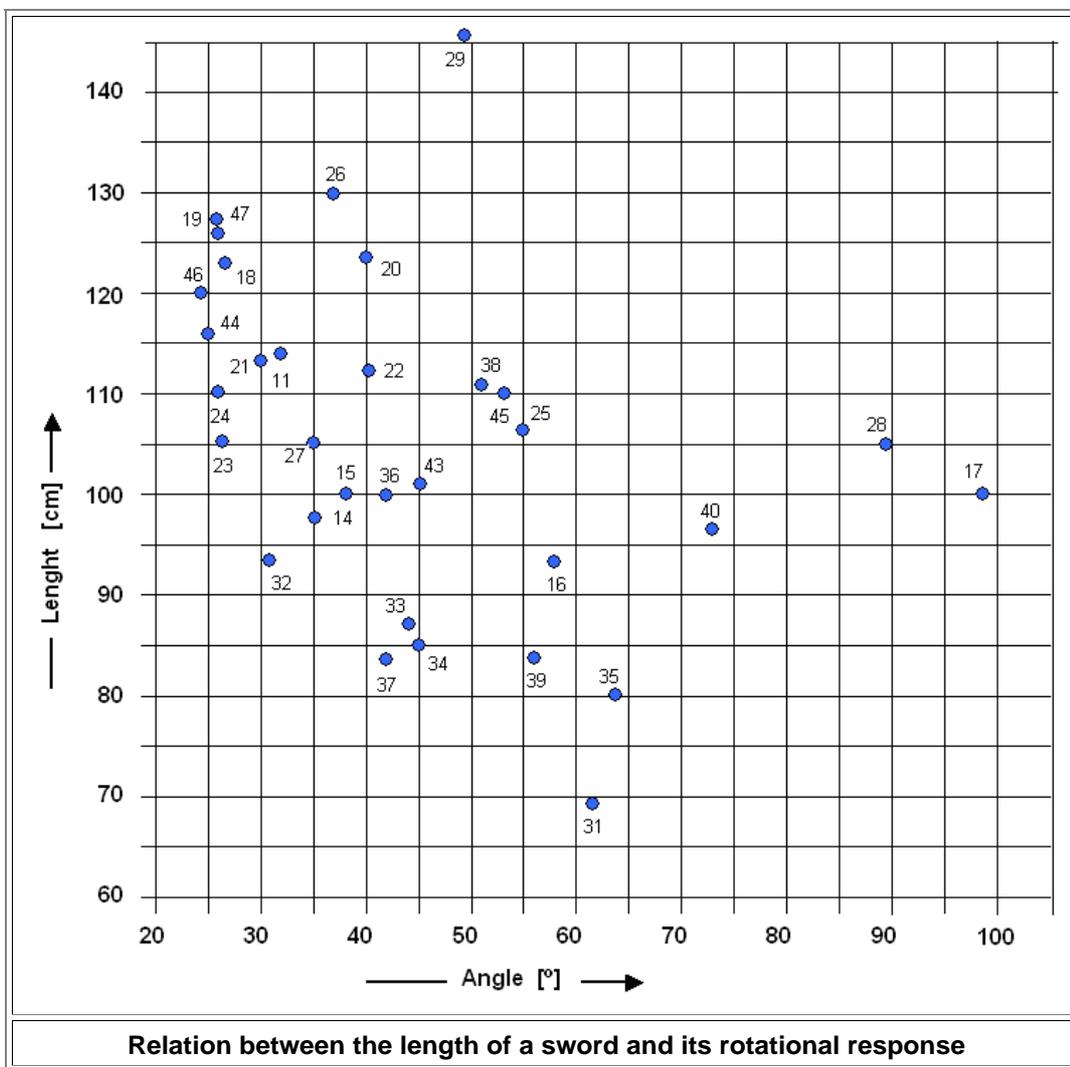
Well! There is almost *no correlation* besides the unavoidable triviality that short and light-weight swords tend to be more agile then long and heavy ones. What that implies is discussed in the backbone.

  If you feel enterprising, you can produce a lot more correlation diagrams, e.g. between percussion point location and mass / length / rotational response and so on. Or the distance between the percussion point - vibration node and the effective mass at the percussion point. Endless possibilities. Get to work.