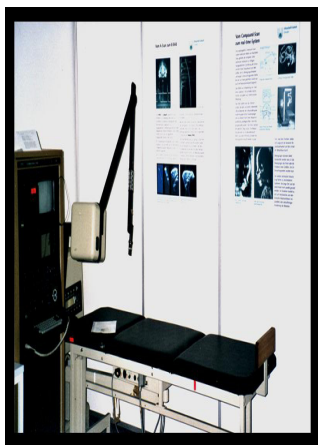


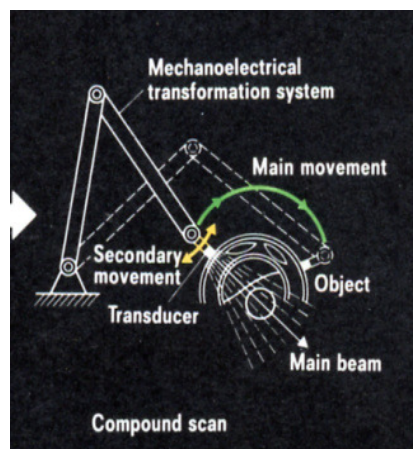
# Twodimensional B-scanning Mechanical Systems

## Compound-scanning

Compound-scanning was the original way to create two-dimensional ultrasound images. A single-element transducer was moved manually in direct skin contact across the selected plane, in multiple directions by sweeping the Probe repeatedly thru a certain sector.

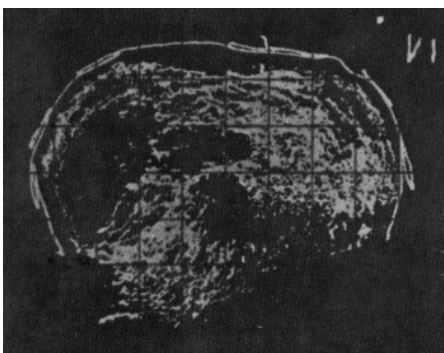


Combison 202 Kretz, 1979



scheme of the scanner arm

Position and direction of the transducer were calculated using position encoders in the scanning arm. The echoes were usually displayed on a storage oscilloscope (static system).



Bistable image

Transverse scan of the upper abdomen, pancreatic cancer



gray scale image

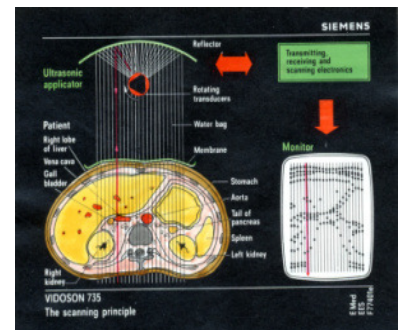
Initially all echoes beyond a certain (adjustable) threshold were displayed as uniform bright dots (bistable system). Around 1973, the gray scale technique was introduced in compound scanners: the echoes were displayed according to their strength.

## Real time system, mechanically

The *Vidoson 635* (Siemens) was the first fast scanning machine (real time) developed by R. Soldner. The ultrasound beams of rotating transducers were reflected as parallel arranged beams into the body using a parabolic mirror. An image frequency of 15/sec as well as gray scale capability enabled a dynamic examination.



Vidoson 635

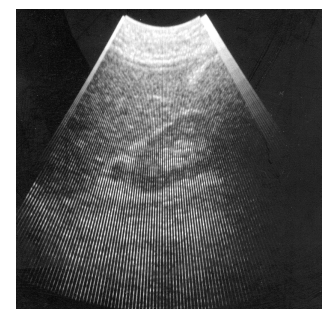


scheme

For the following years mechanical sector probes became standard in ultrasound diagnostics. Even today this method is being used for particular applications. As an example the sector scanner *Combison 100* (Kretz, 1977) used 5 rotating transducers. Always the transducer passing the window (directed to the body) was activated by a magnet, forming a sector image.



Transducer  
Combison 100



adrenal gland tumor

The advanced system *RA 1* (Diasonics 1980) used 3 simultaneously rotating transducers, to form a combined „large field“ image



Transducer RA 1



Pancreatic cancer