

CAN WE DATE ANY MATERIAL?
IS IT ALWAYS USEFULL FOR
THEIR AUTHENTICATION ?

AH! GOOD QUESTION! INDEED,
SOME MATERIALS SUCH AS
GLASS OR METAL ARE NOT
SUBJECT TO DATING...

DATING A STONE
WOULD GIVE THE AGE OF
ITS FORMATION, WHICH IS
USELESS FOR THE ANTIQUITY
OF THE CARVING...

BUT THEN, HOW CAN
WE AUTHENTICATE AN
OBJECT MADE OF
METAL OR STONE?...

WE'LL STUDY OTHER CRITERIAS
RESULTING OF ITS ANTIQUITY!
IF THEY ARE NOT SUBJECT TO
DATING, THEY ARE STILL
SUBJECT TO THE EFFECT OF
TIME: THE WEATHERING OF
THE MATERIAL!...

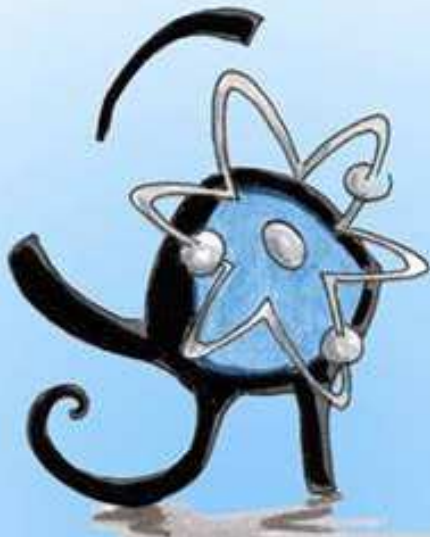
WE WILL STUDY THE SURFACE
IN ORDER TO LOOK FOR
ALTERATIONS LINK TO
EXPOSURE TO NATURAL AND
LONG TERM WEATHERING...

WHICH ANALYTICAL
TECHNIQUE DO WE USE
FOR THAT PURPOSE ?

MICROANALYSIS! IT ALLOWS
US TO PERFORM
MICROSCOPICAL
OBSERVATIONS TOGETHER
WITH A CHEMICAL
CHARACTERIZATION!

FROM THESE INFORMATIONS,
WE CAN IDENTIFY THE
MATERIALS, ANALYZE THE
ALTERATIONS AND VALIDATE
THEIR COMPATIBILITY WITH
THE SUPPOSED ANTIQUITY
OF THE OBJECT'S CARVING

THIS TECHNIQUE IS APPLIED
ON OBJECTS MADE OF
GLASS, STONE AND METALS,...



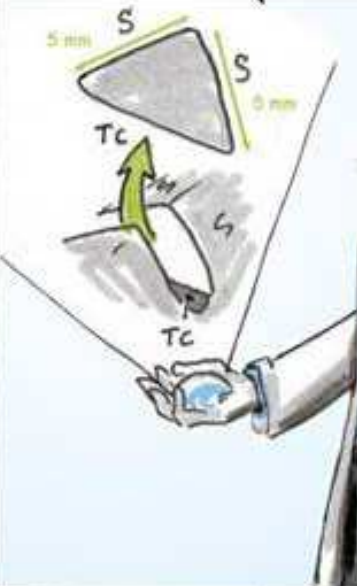
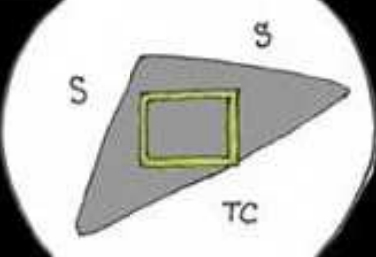


FIRST, LET'S THE CASE OF A STONE. WE NEED A SAMPLE OF THE MATERIAL: IT MUST REPRESENT THE OBJECT AND BE CUT PERPENDICULARLY TO THE SURFACE IN ORDER TO OBSERVE THE PROGRESSION OF THE ALTERATIONS TOWARDS THE CORE OF THE STONE. TO DO SO, WE USE A SMALL SAW. THE SAMPLE IS ONLY A FEW MILLIMETERS WIDE...

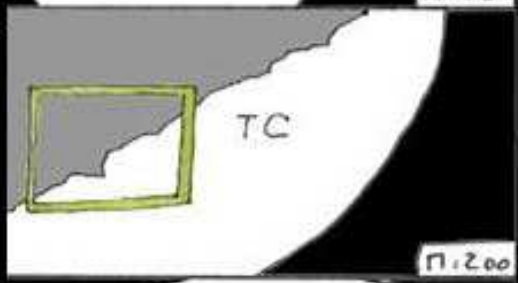
THIS SAMPLE IS COATED IN A POLYMER RESIN. WE MUST BE SURE TO HAVE THE PERPENDICULAR PLAN TO THE SURFACE BENEATH WHEN COATING THE SAMPLE, AS IT IS THE PLAN WHICH MUST BE POLISHED AND STUDIED!...

THE SECTION WE STUDY PRESENTED AT LEAST 3 SIDES: ONE CORRESPOND TO THE CARVED FACE OF THE OBJECT (S), AN OTHER TO THE LINE OF CUT (TC) WHICH REPRESENT THE UNALTERED CORE...

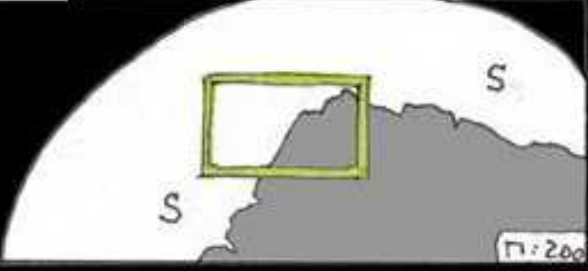
...THE THIRD SIDE MAY BE AN OTHER CARVED FACE, AN OLD BROKEN FACE OR A SECOND LINE OF CUT...



...THE ANALYSIS IS PERFORMED IN TWO STEPS... WE START WITH THE CHARACTERIZATION OF THE STONE'S CORE: THE KIND OF STONE, ITS POROSITY, ITS STATE OF CONSERVATION,...



... THEN WE STUDY THE CARVED FACE!



EVERY MODIFICATION OF TEXTURE OR CHEMISTRY OF THE SURFACE COMPARE TO THE CORE, IS A CLUE OF THE WEATHERING PROCESSES...

WE WILL LOOK FOR THIS GLUES AND DEFINE IF THE WEATHERING PROCESSES ARE NATURAL OR CAUSED BY CHEMICAL AGENTS...

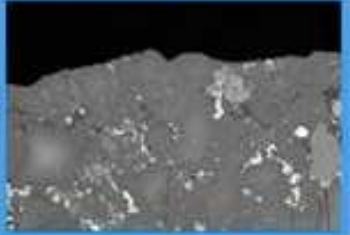
IT IS A VERY THOROUGH WORK WHICH IMPLIES A GOOD KNOWLEDGE OF NATURAL WEATHERING PROCESSES ON ROCKS AND EXPERIENCE WITH OBJECTS OF ART STUDIES



IN THIS FIRST SITUATION, THE CARVED SURFACE PRESENT ALL CHARACTERISTICS OF A NATURAL AND LONG EXPOSITION TO WEATHERING PROCESSES: DEVELOPMENT OF THE POROSITY, DEBONDING GRAINS, DISSOLUTION OF WEAK MINERALS, RECRYSTALLIZATION OF MINERALS...

THESE ELEMENTS INDICATES THAT THE MATERIAL HAS BEEN ERODED AFTER THE STONE WAS CARVED

HOWEVER IN THIS SECOND CASE, THE STONE IS NOT DIFFERENT AT THE SURFACE, NEITHER CHEMICAL OR TEXTURE THE SURFACE AND THE CORE ARE THE SAME. THE MATERIAL DID NOT WEATHER AFTER THE CARVING, SO THE SCULPTURE IS MODERN!



BUT BE CAUTIOUS, FORGERIES TRY TO COPY NATURAL PHENOMENA BY THE USE OF ACIDS ON THE SURFACE OF THE OBJECTS.

HOWEVER, THESE TRICKS DON'T FOOL EXPERIMENTED SCIENTIFICS!



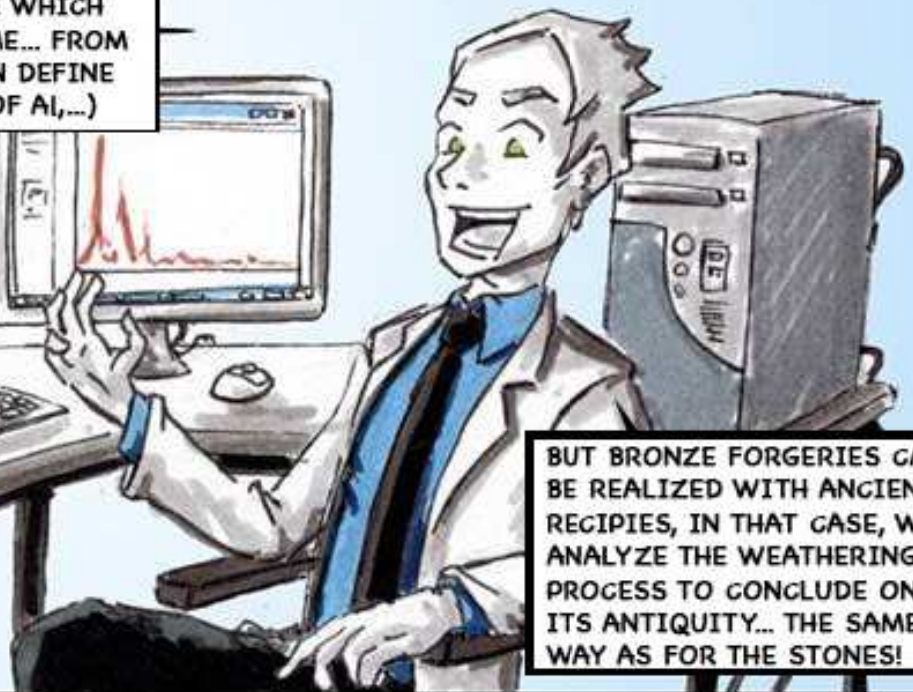
NOW WE WILL SEE WITH A BRONZE OBJECT, THE ANALYTICAL TECHNIQUE BEING THE SAME AS FOR THE STONES, THE SAMPLING WILL BE THE SAME!...



TO SAMPLE WE NEED TO CUT PERPENDICULARLY TO THE SURFACE A FRAGMENT AND COAT IT IN A RESIN WHICH IS NEXT POLISHED...



BRONZE IS AN HUMAN-MADE ALLIAGE WHICH COMPOSITION EVOLVES THROUGH TIME... FROM ITS CHEMICAL COMPOSITION, WE CAN DEFINE IF A BRONZE IS MODERN (PRESENCE OF AL,...)



BUT BRONZE FORGERIES CAN BE REALIZED WITH ANCIENT RECIPES, IN THAT CASE, WE ANALYZE THE WEATHERING PROCESS TO CONCLUDE ON ITS ANTIQUITY... THE SAME WAY AS FOR THE STONES!

TO RESUME, THE SCIENTIFIC ANALYSIS OF STONE AND BRONZE OBJECTS IS BASED ON THE IDENTIFICATION OF THE MATERIAL AND THE STUDY OF THE WEATHERING PROCESS, NOT TO PERFORM A DATATION, BUT TO CONFIRM A COMPATIBILITY WITH THE ANTIQUITY.



MOREOVER, THE WEATHERING IS ALSO FUNCTION OF THE CONSERVATION CONDITIONS, TWO OBJECTS SIMILAR AND MADE AT THE SAME TIME BUT EXPOSED TO DIFFERENT ENVIRONMENTS WILL NOT DEVELOPP THE SAME WEATHERING PROCESSES... THAT'S WHY, THESE STUDIES HAVE TO BE LED WITH GREAT CARE AND NEEDS EXPERIENCE AND KNOWLEDGE!

... HOWEVER SOMETIMES, INTERPRETATIONS OF THE RESULTS MIGHT BE DISCUSSED: A WEATHERING PROCESS CAN BE NATURAL, BUT NOT DEVELOPPED ENOUGH ACCORDING TO THE PRESUMED ANTIQUITY OF THE OBJECT, IT COULD BE A MORE RECENT OBJECT, OR AN ANCIENT ONE WHICH WAS POLISHED...

