Zeitschrift: Trans : Publikationsreihe des Fachvereins der Studierenden am Departement Architektur der ETH Zürich

Herausgeber: Departement Architektur der ETH Zürich

Band: - (2023)

Heft: 42

Artikel: Part three : once fish teeth turned into rocks and powered the modern world

Autor: Morgillo, Davide

DOI: https://doi.org/10.5169/seals-1051755

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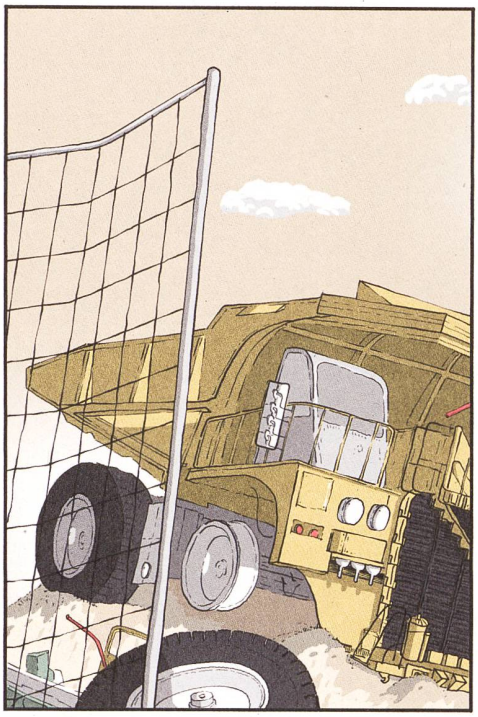
PART THREE: ONCE FISH TEETH TURNED INTO ROCKS AND POWERED THE MODERN WORLD

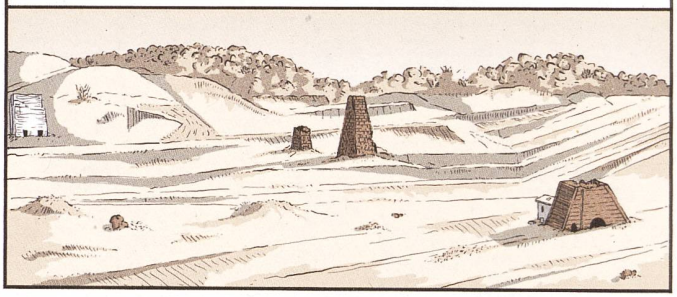
Davide Morgillo

Davide Morgillo, born 1994, graduated in architecture from ETH Zurich in 2020. Currently, he works as an architect in Winterthur, as a teaching assistant at ETH Zurich and a comic artist. After «Microbial Globalisation» and «Once Jellyfish Started to Blossom and Grow Hair» this contribution forms the third part of his comic series for trans magazin.

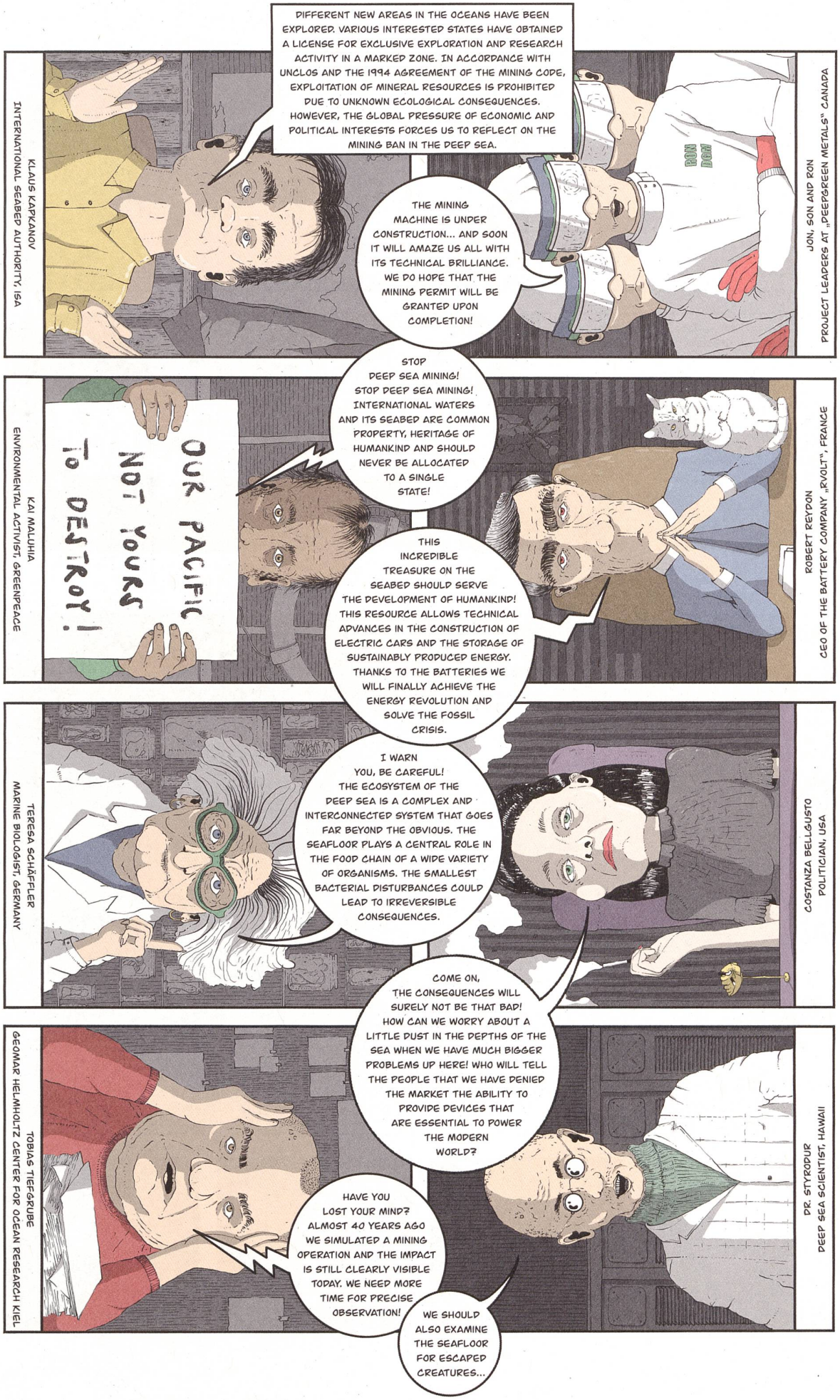
MONDAY, JULY 03, 2028. DEEP AND EMPTY HOLES IN THE EARTH REMAIN AS WITNESSES FROM ANOTHER TIME. DUE TO A STEADILY INCREASING DEMAND FOR METALS, ORE MINING AREAS SUCH AS THIS ONE IN THE WHEATBELT-REGION IN WESTERN AUSTRALIA HAVE BEEN DEPLETED AND THE MINING PROCESSES HAVE BEEN SHUT DOWN. COBALT, NICKEL AND COPPER, RARE METALS REQUIRED TO PRODUCE BATTERIES FOR ELECTRIC CARS, COMPUTERS AND MANY OTHER PORTABLE DEVICES, HAVE BEEN SOURCED FROM ALL THE GROUNDS WHERE THE PRECIOUS RAW MATERIALS WERE AVAILABLE CLOSE TO THE SURFACE OF THE EARTH.



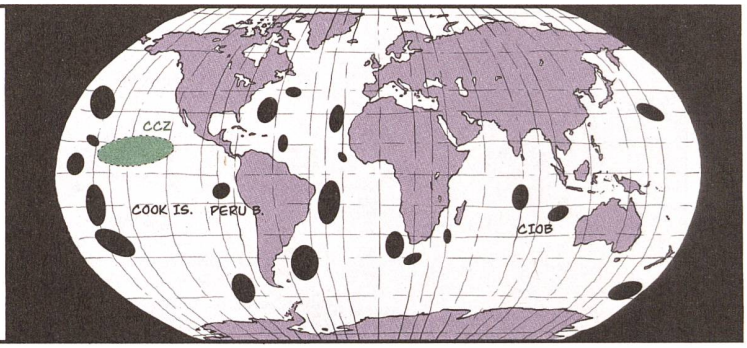
WHAT REMAINS IS A WASTELAND, A TERRAIN VAGUE, ADORNED WITH ABANDONED TECHNICAL RELICS SURROUNDED BY MEMORIES ENGRAVED IN THE SLOPES OF MACHINE-MADE VALLEYS.



IN RECENT YEARS, A NEW SOURCE HAS BEEN DISCOVERED IN HIGHLY SENSITIVE ENVIRONMENTS. THIS IS CURRENTLY THE SUBJECT OF TENSE DEBATE...

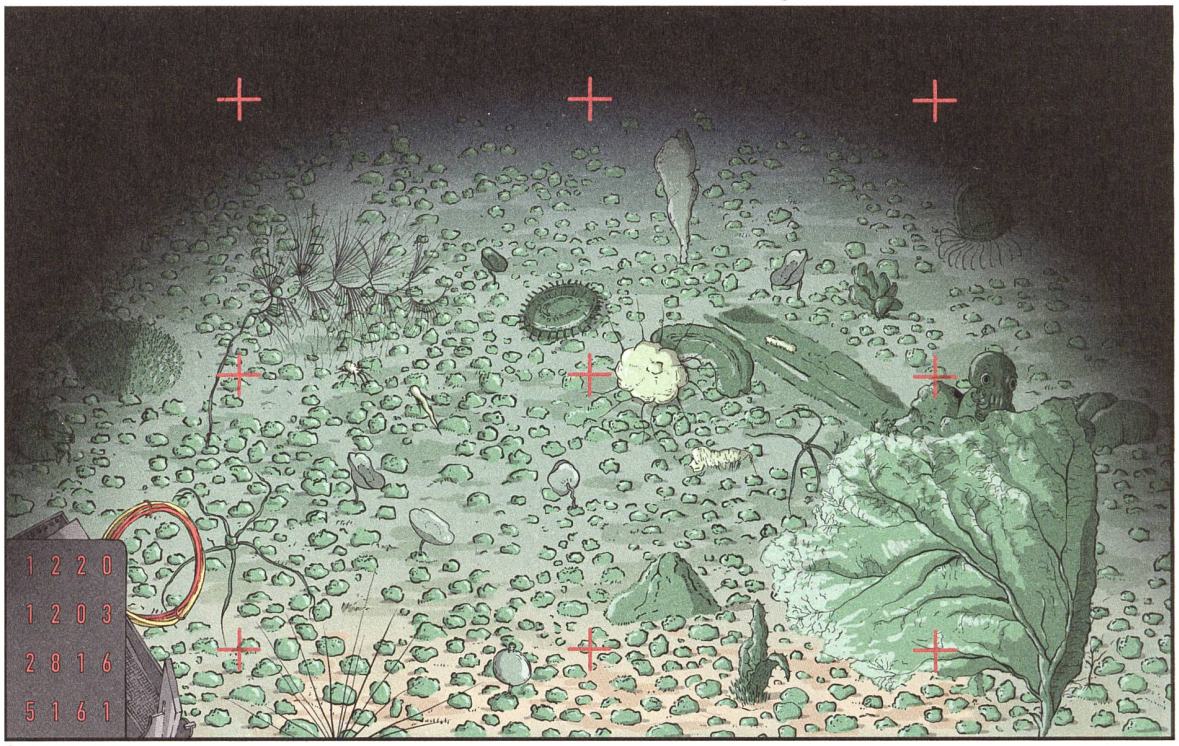

DIFFERENT NEW AREAS IN THE OCEANS HAVE BEEN EXPLORED. VARIOUS INTERESTED STATES HAVE OBTAINED A LICENSE FOR EXCLUSIVE EXPLORATION AND RESEARCH ACTIVITY IN A MARKED ZONE. IN ACCORDANCE WITH UNCLOS AND THE 1994 AGREEMENT OF THE MINING CODE, EXPLOITATION OF MINERAL RESOURCES IS PROHIBITED DUE TO UNKNOWN ECOLOGICAL CONSEQUENCES. HOWEVER, THE GLOBAL PRESSURE OF ECONOMIC AND POLITICAL INTERESTS FORCES US TO REFLECT ON THE MINING BAN IN THE DEEP SEA.
KLAUS KAPKANOV
INTERNATIONAL SEABED AUTHORITY, ISA
THE MINING MACHINE IS UNDER CONSTRUCTION... AND SOON IT WILL AMAZE US ALL WITH ITS TECHNICAL BRILLIANCE. WE DO HOPE THAT THE MINING PERMIT WILL BE GRANTED UPON COMPLETION!
RON
DON
JON, SON AND RON
PROJECT LEADERS AT „DEEPGREEN METALS" CANADA
STOP DEEP SEA MINING! STOP DEEP SEA MINING! INTERNATIONAL WATERS AND ITS SEABED ARE COMMON PROPERTY, HERITAGE OF HUMANKIND AND SHOULD NEVER BE ALLOCATED TO A SINGLE STATE!
OUR PACIFIC NOT YOURS TO DESTROY!
KAI MALUHIA
ENVIRONMENTAL ACTIVIST, GREENPEACE
THIS INCREDIBLE TREASURE ON THE SEABED SHOULD SERVE THE DEVELOPMENT OF HUMANKIND! THIS RESOURCE ALLOWS TECHNICAL ADVANCES IN THE CONSTRUCTION OF ELECTRIC CARS AND THE STORAGE OF SUSTAINABLY PRODUCED ENERGY. THANKS TO THE BATTERIES WE WILL FINALLY ACHIEVE THE ENERGY REVOLUTION AND SOLVE THE FOSSIL CRISIS.
ROBERT REYDON
CEO OF THE BATTERY COMPANY „RVOLT", FRANCE
I WARN YOU, BE CAREFUL! THE ECOSYSTEM OF THE DEEP SEA IS A COMPLEX AND INTERCONNECTED SYSTEM THAT GOES FAR BEYOND THE OBVIOUS. THE SEAFLOOR PLAYS A CENTRAL ROLE IN THE FOOD CHAIN OF A WIDE VARIETY OF ORGANISMS. THE SMALLEST BACTERIAL DISTURBANCES COULD LEAD TO IRREVERSIBLE CONSEQUENCES.
TERESA SCHÄFFLER
MARINE BIOLOGIST, GERMANY
COME ON, THE CONSEQUENCES WILL SURELY NOT BE THAT BAD! HOW CAN WE WORRY ABOUT A LITTLE DUST IN THE DEPTHS OF THE SEA WHEN WE HAVE MUCH BIGGER PROBLEMS UP HERE! WHO WILL TELL THE PEOPLE THAT WE HAVE DENIED THE MARKET THE ABILITY TO PROVIDE DEVICES THAT ARE ESSENTIAL TO POWER THE MODERN WORLD?
COSTANZA BELLGUSTO
POLITICIAN, USA
HAVE YOU LOST YOUR MIND? ALMOST 40 YEARS AGO WE SIMULATED A MINING OPERATION AND THE IMPACT IS STILL CLEARLY VISIBLE TODAY. WE NEED MORE TIME FOR PRECISE OBSERVATION!
WE SHOULD ALSO EXAMINE THE SEAFLOOR FOR ESCAPED CREATURES...
TOBIAS TIEFGRUBE
GEOMAR HELMHOLTZ CENTER FOR OCEAN RESEARCH KIEL
DR. STYRÓPUR
DEEP SEA SCIENTIST, HAWAII

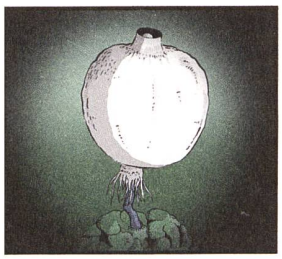
THE DEBATE CENTERS AROUND POLYMETALLIC NODULES, ALSO CALLED MANGANESE NODULES, WHICH LIE AROUND ABUNDANTLY ON THE SEAFLOOR IN DEPTHS BETWEEN 4000 AND 5000 M. THE REASON FOR THEIR HIGH VALUE IN THE SUISTAINABLE ENERGY INDUSTRY IS THE HIGH CONCENTRATION OF RARE METALS, ESPECIALLY COBALT, WHICH IS CRUCIAL TO STORING ENERGY. THE NODULES APPEAR IN DIFFERENT AREAS IN THE OCEAN BUT ONE OFFERS AN UNBEATEN RICHNESS. THE CLAIRON-CLIPPERTON-ZONE, CALLED CCZ, LOCATED BETWEEN THE HAWAIIAN ISLANDS IN THE NORTHWEST AND MEXICO IN THE EAST IS KNOWN FOR CONTAINING A VAST CARPET OF NODULES ON TOP OF THE SAND, BEING TRULY A DEEP SEA ELDORADO FOR SEEKERS.

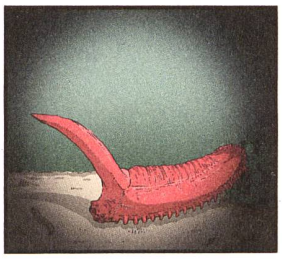


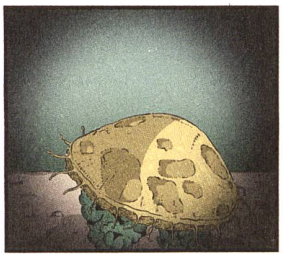
THE CCZ ITSELF, APROXIMATELY THE SIZE OF EUROPE, IS AGAIN DIVIDED INTO DIFFERENT ZONES, RESERVED BY DIFFERENT STATES FOR OBSERVATION AND MINING. ONLY A FEW AREAS IN THE PERIPHERY ARE BLOCKED FOR ENVIRONMENTAL PROTECTION.

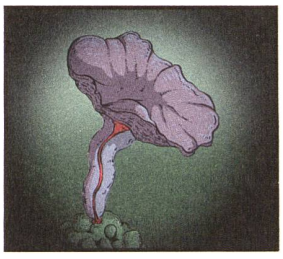
DESPITE THE EXTREME CONDITIONS, THE CLAIRON-CLIPPERTON-ZONE IS NOT DEVOID OF LIFE. THE SEAFLOOR IS A VERY SPECIFIC ECOSYSTEM, IN WHICH A HIGH VARIETY OF SMALL DEEP SEA ANIMALS, PLANTS AND BACTERIA DEPEND ON THE STONY GROUND TO STAY STILL AND FIND NUTRIENTS. BEFORE GETTING RESEARCHED OR EVEN DISCOVERED, MANY SPECIES HAVE BEEN PUT AT RISK OF EXTINCTION DUE TO THE ECONOMIC INTEREST OF THESE NODULES.

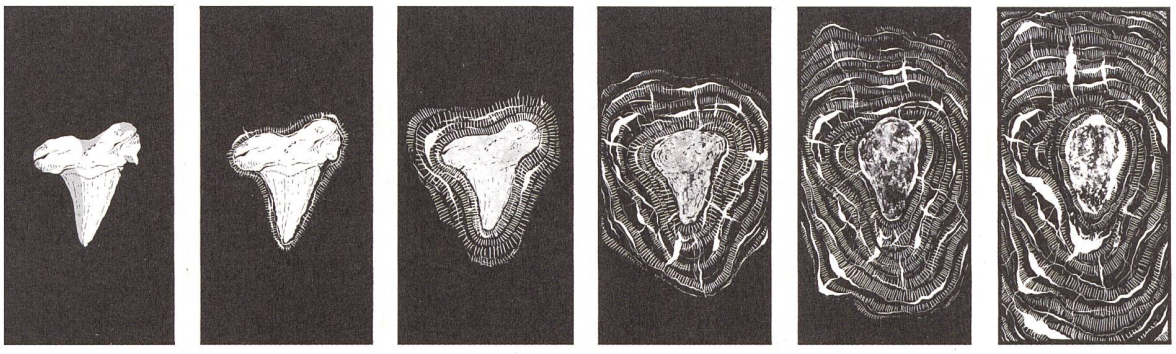




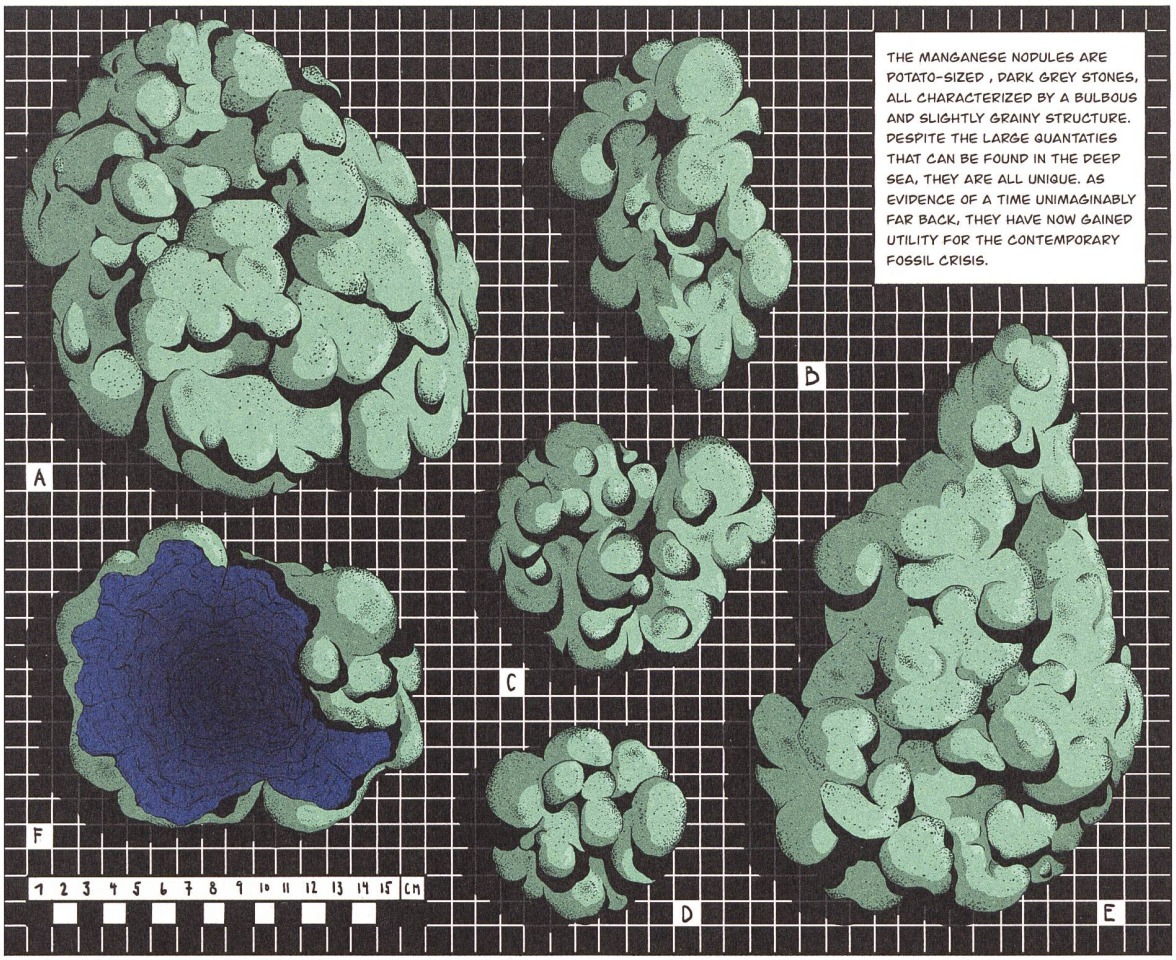




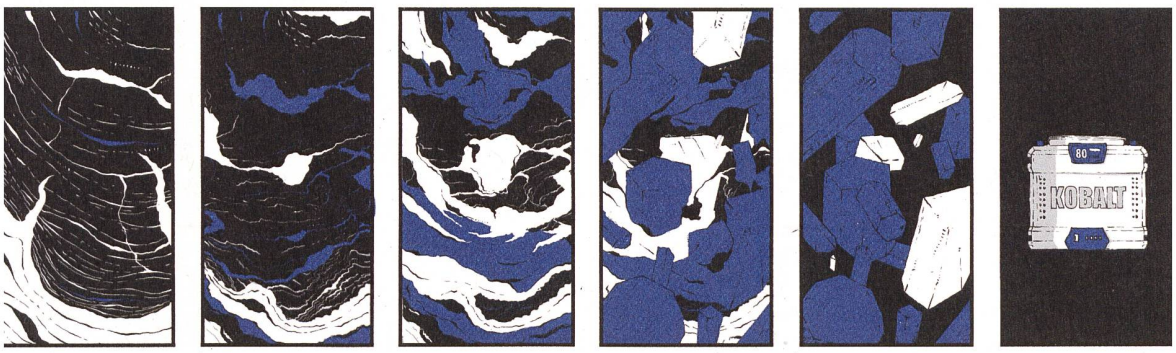


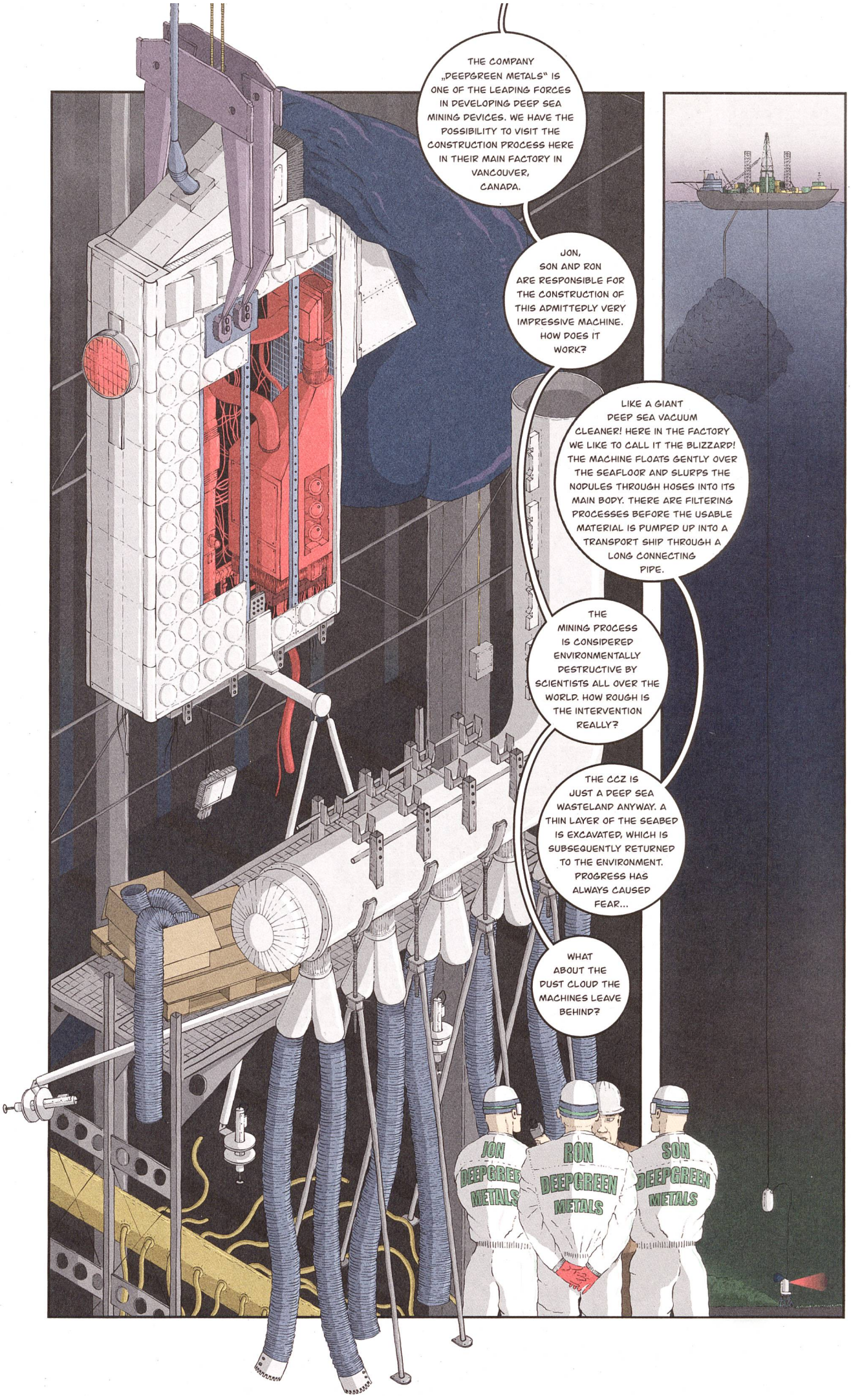


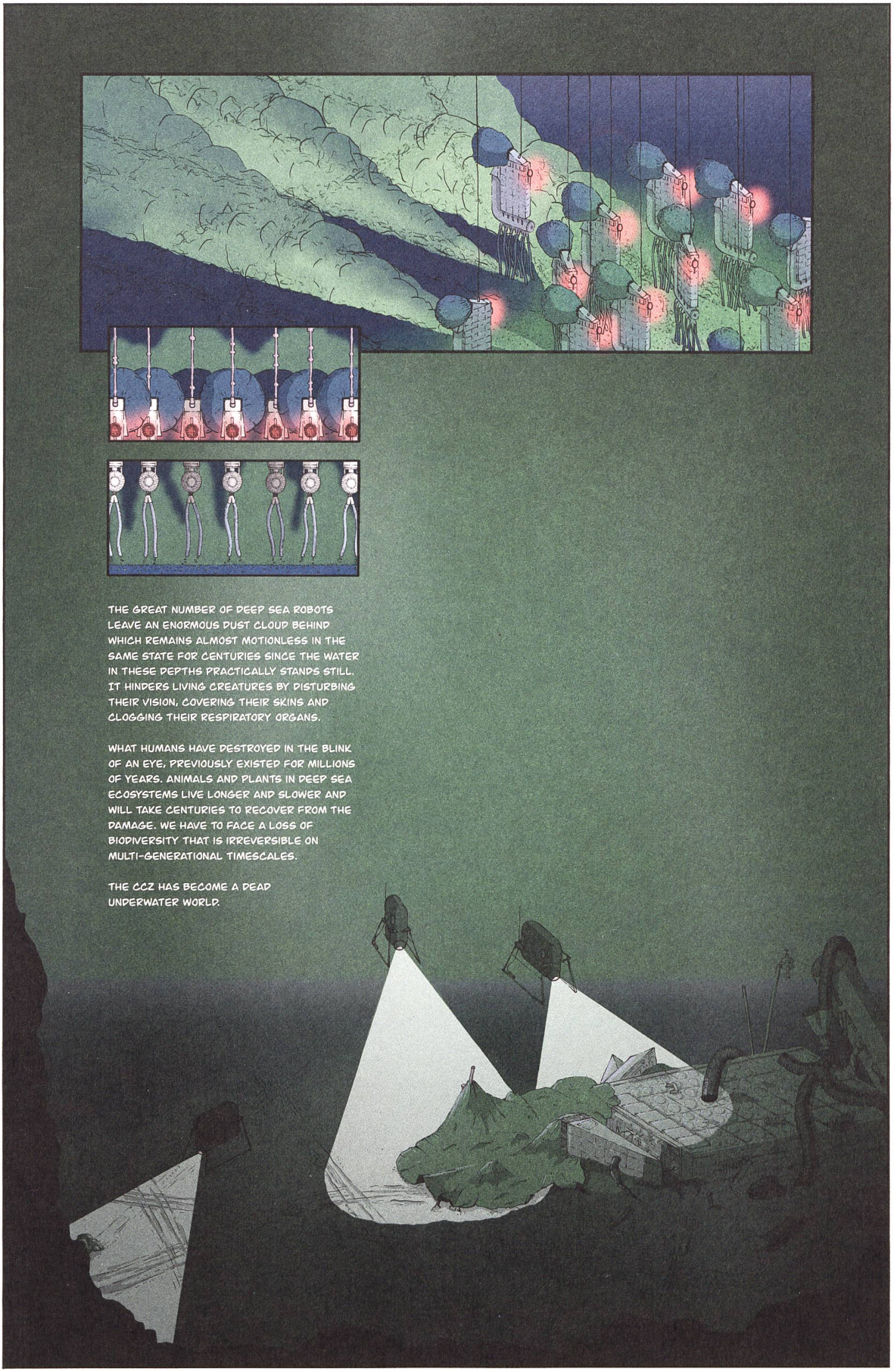
THE NODULES FORM OVER TIME. IT TAKES ABOUT 10 MILLION YEARS FOR A SINGLE STONE TO DEVELOP. AROUND A SUNKEN OBJECT, LIKE A SHARK'S TOOTH, DIFFERENT METALS CONTAINED IN THE SEAWATER ACCUMULATE LAYER BY LAYER AROUND IT AND BUILD CRUST DEPOSITS. UNDER THE RIGHT CONDITIONS, A NODULE IS FORMED, PROTECTING A KIND OF FOSSIL IN ITS INNER CORE.



FROM THE VARIETY OF METALS CONTAINED IN THE NODULES, THE HIGHEST ATTENTION IS PAID TO COBALT, THE INDUSTRY'S „BLUE GOLD." IT IS INDISPENSABLE FOR THE CONSTRUCTION OF BATTERIES OF ALL KINDS. IN PARTICULAR, THE AUTOMOBILE INDUSTRY IS COUNTING ENTIRELY ON IT TO FINALLY RELY EXCLUSIVELY ON ELECTROMOBILITY AND THUS SUPPORT THE EFFORTS TO MINE RESOURCES ON THE OCEAN BOTTOM. LET'S FIND OUT MORE ABOUT THIS MINING PROCESS!




THE COMPANY „DEEPGREEN METALS“ IS ONE OF THE LEADING FORCES IN DEVELOPING DEEP SEA MINING DEVICES. WE HAVE THE POSSIBILITY TO VISIT THE CONSTRUCTION PROCESS HERE IN THEIR MAIN FACTORY IN VANCOUVER, CANADA.
JON, SON AND RON ARE RESPONSIBLE FOR THE CONSTRUCTION OF THIS ADMITTEDLY VERY IMPRESSIVE MACHINE. HOW DOES IT WORK?
LIKE A GIANT DEEP SEA VACUUM CLEANER! HERE IN THE FACTORY WE LIKE TO CALL IT THE BLIZZARD! THE MACHINE FLOATS GENTLY OVER THE SEAFLOOR AND SLURPS THE NODULES THROUGH HOSES INTO ITS MAIN BODY. THERE ARE FILTERING PROCESSES BEFORE THE USABLE MATERIAL IS PUMPED UP INTO A TRANSPORT SHIP THROUGH A LONG CONNECTING PIPE.
THE MINING PROCESS IS CONSIDERED ENVIRONMENTALLY DESTRUCTIVE BY SCIENTISTS ALL OVER THE WORLD. HOW ROUGH IS THE INTERVENTION REALLY?
THE CCZ IS JUST A DEEP SEA WASTELAND ANYWAY. A THIN LAYER OF THE SEABED IS EXCAVATED, WHICH IS SUBSEQUENTLY RETURNED TO THE ENVIRONMENT. PROGRESS HAS ALWAYS CAUSED FEAR...
WHAT ABOUT THE DUST CLOUD THE MACHINES LEAVE BEHIND?
JON DEEPGREEN METALS
RON DEEPGREEN METALS
SON DEEPGREEN METALS



THE GREAT NUMBER OF DEEP SEA ROBOTS LEAVE AN ENORMOUS DUST CLOUD BEHIND WHICH REMAINS ALMOST MOTIONLESS IN THE SAME STATE FOR CENTURIES SINCE THE WATER IN THESE DEPTHS PRACTICALLY STANDS STILL. IT HINDERS LIVING CREATURES BY DISTURBING THEIR VISION, COVERING THEIR SKINS AND CLOGGING THEIR RESPIRATORY ORGANS.

WHAT HUMANS HAVE DESTROYED IN THE BLINK OF AN EYE, PREVIOUSLY EXISTED FOR MILLIONS OF YEARS. ANIMALS AND PLANTS IN DEEP SEA ECOSYSTEMS LIVE LONGER AND SLOWER AND WILL TAKE CENTURIES TO RECOVER FROM THE DAMAGE. WE HAVE TO FACE A LOSS OF BIODIVERSITY THAT IS IRREVERSIBLE ON MULTI-GENERATIONAL TIMESCALES.

THE CCZ HAS BECOME A DEAD UNDERWATER WORLD.