Professor Thomas Levy is an Archaeology of Ancient Israel and Neighboring Lands professor at the University of California, San Diego and a Fulbright Senior Scholar at the University of Haifa, Israel. In an interview given to Jerusalem Post newspaper, together with Professor Assaf Yasur-Landau, he discusses their joint collaboration to research the Ice Age's waned, prehistoric villages along Israel's coast that were swamped and now lie beneath the waves. Excavating an underwater village during the Corona pandemic has been particularly challenging, however modern technology has made it possible.

How are archaeologists using hi-tech during the coronavirus era?

Archaeologists from Haifa and San Diego had to get creative to work on their collaborative excavation without actually travelling due to quarantines.

By HANNAH BROWN NOVEMBER 25, 2020 19:14 Jerusalem Post

They say that necessity is the mother of invention and the pandemic has inspired a great deal of inventiveness on the part of archaeologists from Haifa and San Diego who had to find a way to collaborate on underwater excavations of a late Stone Age Neolithic site in northern Israel during the coronavirus crisis.

Prof. Assaf Yasur-Landau of the Leon Recanati Institute for Maritime Studies and the University of Haifa and his team were set to start excavating an ancient village buried under the waters off the Carmel coast in Israel with a California-based team headed by Prof. Thomas E. Levy last summer. Levy is a director at the Scripps Center for Marine Archaeology at the University of California at San Diego (UCSD) and head of the Center for Cyber-Archaeology at the Qualcomm Institute, as well as a professor of anthropology at UCSD. But then the pandemic came along and the California team didn't have time for the quarantine required on both ends of the journey, which would have turned the planned three-week expedition into a nearly two-month commitment which would have required the American half of the team to be idle for weeks.

"So many joint expeditions of this kind have been cancelled," said Levy. It didn't look as if it could take place, but Yasur-Landau said, "We understood that now we have to find the best way to collaborate, that will allow us to make lemonade from lemons."

Using hi-tech lemons, they ended up producing lemonade that was just as good as anything that could have created if the San Diego team had made it to Israel. They just finished the excavations last week and are now at work on writing up their findings.

"Our project on reconstructing the ancient human life in this site could not go forward without excavations," said Yasur-Landau. But as the pandemic dragged on, they realized that they could not postpone it forever. "We had the funding, we had grad students," said Yasur-Landau. "It would be a pity to postpone it indefinitely. So we thought, 'How can we collaborate remotely?'"

Levy, who lived in Israel for years, had the same can-do attitude. But the question was: How could they work together when only half the team would have access to the artifacts? Zoom calls may work well in many disciplines, but archaeologists cannot work just by talking-heads chats, although of course they do hold online meetings. And they could not just toss objects that were thousands of years old in the mail.

So they were able to work around the disadvantages of the virus restrictions using photogrammetry, where photography and technology create 3D models in a lab. The Israeli divers would record all they did with GoPro cameras and would scan the artifacts they collected at the end of each day and then send these scans to San Diego. The researchers there would then create the objects in the lab, using 3D printers.

“When they take artifacts back to the university, they scan them, send us the objects, and we can just print the object. What’s cool is that I get the object here printed in 3D, so I can hold it in my hands,” said Levy. “Even a 3D image in virtual reality is not the same as holding it in your hand.”

In some ways, this hybrid approach worked more efficiently than a traditional collaboration in which the teams would excavate together and later analyze the data and write it up. The 10-hour time difference between Israel and California meant that the researchers were able to work on a 24/7 schedule. While the Californians were still sleeping, the Israelis were underwater collecting artifacts. They scanned their discoveries and sent them to California by evening, Israel time, and the American side could create then 3D models and work with them, getting back to the Israelis quickly with their analysis.

“Often, when we are in the field, there is a backlog in data processing and modeling,” said Levy.

Roey Nickelsburg, the field director of underwater excavations, who is a Ph.D. student of Yasur-Landau and Ruth Shahack-Gross, said that, “The time difference helped us. We got results from San Diego sometimes the same day.”

Levy and the teams are appreciative of the support they received from their backers for the state-of-the-art technology that made this project possible, including the Koret Foundation in San Francisco which, he explained, has a special program to enhance global scientific collaboration between Israeli and California-based researchers, and the Scripps Institution of Oceanography in San Diego.

Another way the photogrammetry helped was in allowing the researchers to keep accurate records of their progress. Working underwater is not like conducting an excavation on land, in which the archaeologists can dig all day, cover up the site at night and pick up where they left off in the morning. Stormy weather can turn waters murky and what was excavated one day can be covered in sand the next morning. Levy explained that in the past, researchers would take waterproof pens and would simply draw a picture of the site at the end of the day.

“But that wasn’t always very accurate,” he said. The cameras gave a much clearer picture.

The teams have created a poster about their work methods and are currently writing up an article on their findings. Levy noted that at a recent ASOR (American Schools of Oriental Research) conference this month, the Haifa/San Diego group were one of just a handful of teams that had a poster to present on new research, since most new archaeological research expeditions have been cancelled or postponed. The California researchers are planning to come to Israel in February, if possible.

These researchers on both sides of the globe hope their success in working together during the pandemic may inspire others. Said Nickelsberg, “Using this technology creatively opens many possibilities for collaboration between people in different places.”