

## Vrije Universiteit Amsterdam objects and their stories

### 1985-1990 Nick and Carst and the Netherlands Twin Register

There are many research institutes at VU Amsterdam. These institutes often bring together various disciplines around a specific theme. One of the more unusual topics is research on twins, which has been carried out at VU Amsterdam since the 1980s. This institute is represented in the collections in a unique way: with a work of art. Art curator Wende Wallert and Professor Dorret Boomsma from the Twin Institute tell us more.

#### Nick and Carst

By Wende Wallert

In 2016, photographers [Monique Eller](#) and [Bodine Koopmans](#) made a series of portraits about the twin phenomenon entitled '[DOUBLE DUTCH](#)', in collaboration with the NTR and VU Amsterdam. The results of their work were displayed in an exhibition in the Main Building. Set against a muted background, the portrait of Nick and Carst beautifully reveals their similarities and differences as well as the special bond that twins share.

VU Amsterdam aims to stimulate the interaction between art and science. Like science, art offers us new insights, but from the imagination. In its own gallery space called WONDER, VU Amsterdam organises exhibitions and events to share current artistic and scientific research with the public.



#### The Netherlands Twin Register

By Dorret Boomsma

I began my PhD studies at Vrije Universiteit Amsterdam in 1983, after completing a doctoral programme there and obtaining an MA at the Institute for Behavioural Genetics in Boulder, Colorado. It was in Boulder that I became aware of the value of twin studies. Together with my supervisor, [Prof. Orlebeke](#), we invited twins and triplets between the ages of thirteen and twenty to participate along with their parents in a study on the genetics of cardiovascular risk factors. We got their addresses with the help of the civil registry of the municipality of Amsterdam, but it soon became clear that it would be very expensive to recruit really large groups of twins for hereditary research via that route. We therefore decided to set up our own twin register at VU Amsterdam. This became the [Netherlands Twin Register](#) (NTR). We currently have around 70,000 sets of twins and about the same number of family members registered. In other words, the NTR is a twin family register.

We started with two groups: young adults (and their parents and siblings) and newborn twins and triplets. Prof. Orlebeke lived next door to the director of a baby congratulation service. That organisation would go to visit young parents and the NTR was allowed to hand out a leaflet inviting parents of young twins to register.

Information on development, health, fertility, lifestyle, cognitive skills and personality comes mainly from the questionnaires, which are sent to participants every few years. Teachers of young twins also participate and provide information about children from multiple births and their siblings in the school setting. In addition, there are projects that collect data on things like IQ, blood pressure and brain functions. The NTR-BIOBANK project started around 2004. In this project, biological material (such as blood) was collected from 10,000 participants and then used to isolate [DNA](#) and [RNA](#), and to measure biomarkers ranging from cholesterol to [telomere](#) length. For years, NTR staff have been making early morning visits to participants in their homes.

All these measurements and findings can be used to investigate the classic question at the heart of twin research: what explains differences between people? Does the explanation lie in our environment or in our DNA? More than 30 years of NTR research shows that the answer is not *either-or*, but *both*. There are almost no human characteristics in which our genome does not play a role. In recent years, there has also been increasing interest in the dependence of genes on the environment. The environment in which people live or the environment they seek is not random, but influenced by their genome.

The combination of twin family research with DNA data collected over several generations has proved very valuable in questions of intergenerational transmission and in predictions based on genetic information. We can still learn a lot in this regard from identical twins in particular. [Identical](#), or monozygotic, twins are born from a single fertilised egg that splits a few days after fertilisation. This leads to two, or sometimes even three or four individuals with the same genome. So when it comes to characteristics that are strongly related to DNA information, such as appearance (see the photo of Nick and Carst), identical twins are very similar. They have (almost) the same DNA and thus identical risk profiles for diseases and disorders. But research on identical twins actually shows that genetic determinism does not exist: the same genotype does not necessarily lead to the same outcome in terms of health or behaviour. The differences within sets of identical twins are the best estimate we have for the boundaries of predictability.

The participation of children from identical and fraternal multiple births and their family members, all of whom have selflessly taken part in NTR research over the past three decades, has produced a database of longitudinal data that is the only one of its kind in the world.

*Wende Wallert is curator of the VU Amsterdam [Art Collection](#), while Prof. [Dorret Boomsma](#) is professor of biological psychology and founder of the Netherlands Twin Register at VU Amsterdam.*

For an overview of the stories highlighted in this exhibition, see: [VU Amsterdam objects and their stories | 140 years of Vrije Universiteit Amsterdam](#)