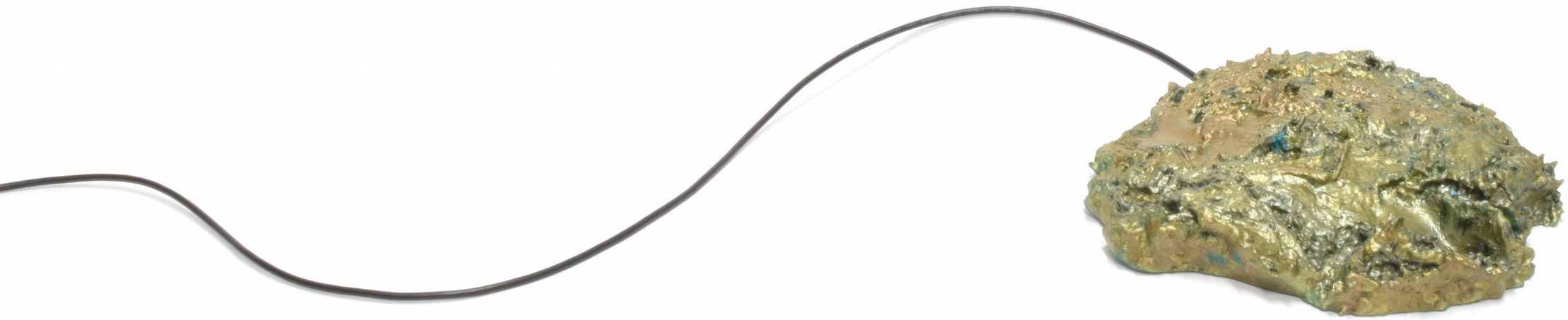
Dani Ploeger

A New Middle of Nowhere



Dani Ploeger – A New Middle of Nowhere

GPS spoofing object (brass plated bison dropping replica with radio transmitter), performance (foot journey to geographical centre of biosphere reserve), digital video, digital photograph, annotated Google Maps excerpt

Satellite navigation

For hunter-gatherer people, dynamic markers such as animal spoor and droppings played (and play) an important role in the navigation of space. In sedentary cultures, such transient markers have largely lost their significance. Static boundary demarcations – made of wood, stone, and more recently brass – mark the limits of land property and key points to measure precise, absolute distances between places. These in turn act as navigational guides. More recently, the omnipresence of Global Positioning System (GPS) has further heightened the prevalence of an experience of space as absolute and static.

With GPS, your phone or other tracking device can determine your precise geographical location anywhere in the world at any time. The technology was first used on a large scale by the US military during the Gulf War in 1990-91 and proved decisive in the ability to navigate the desert landscapes of Kuwait and eastern Iraq, giving American and coalition forces a tactical advantage over the defending Iraqi military. After the war, the use of GPS in the civilian domain rapidly expanded. Nowadays, the omnipresence of mobile devices have made satellite-based navigation a standard component of everyday life. Moving through urban and rural environments is increasingly done with the assistance of Google Maps, while numerous other digital services make use of satellite positioning with users even hardly noticing.

This development has led to a shift in the experience of space in everyday life. The possibility to determine your precise geographical coordinates at any time affects spatial awareness, regardless of whether you are actively using the GPS function of your phone or not. The experience of being in a space that is beyond precise localization, the feeling of being ‘in the middle of nowhere’, has become increasingly rare.

Virtual junkspace

The relevance of the loss of such spatial experience goes beyond mere nostalgic lamentation. As American Studies scholar Caren Kaplan [1] has suggested, GPS promotes a militarized vision of public space, which can be traced back to its origins as a warfare technology. When we navigate the streets with Google Maps, our focus on the moving blue dot on the screen fixates our attention on the ‘target’ of our movements, at the expense of observing and engaging with the features of the environment we are in, and participating in social interaction (e.g. asking passers-by for directions). The difficulty to recognize street names on most digital maps (oftentimes, the more you zoom in, the more they seem to disappear) further promotes this tendency; rather than looking for, and reading street signs in your surroundings, you are encouraged to keep staring at the map continuously.

On this map, sites for consumption and capital exchange – shops, businesses and mass-culture entertainment such as attraction parks – tend to be marked most prominently. What might once have been experienced as a common space, accessible to, and serving the interests of the entire community – or existing in its own right regardless of human interests – is now represented on the map as an area with absolute dimensions, formatted to accommodate the interests of capital accumulation.

Thus, everyday satellite-based navigation can be seen as a gateway to a next level version of what architect Rem Koolhaas has coined as ‘junkspace’ [2]. For Koolhaas, junkspace concerns a built, physical environment, the properties of which are shaped to entirely serve consumer culture. While GPS navigation doesn’t trans-form physical space, it draws you into a virtual overlay of space, which transforms spatial experience towards a consumerist and colonial perspective that intensifies the implications of Koolhaas’ architectural critique.

The primeval forest

In Polish, large forest areas are designated as 'puszcza', a term most closely translated as 'wilderness'. Accordingly, the strict reserve of Białowieża Forest, a UNESCO world heritage site, is often promoted to tourists as 'the last untouched wilderness of Europe,' [3] 'which is governed by eternal laws of nature' [4] and where you can 'see how does the world untouched by civilization look like' (sic) [5]. As such, one might expect an experience of wilderness in the sense of the definition of the WILD Foundation: 'the most intact, undisturbed wild natural areas left on our planet – those last truly wild places that humans do not control and have not developed with roads, pipelines or other industrial infrastructure.' [6]

However, like anywhere else, GPS signals can be received throughout the forest. Hence, the 'middle of nowhere,' which you might have hoped to find in the wilderness of the primeval forest in Bialowieza, doesn’t exist here anymore either. If we follow the definition of the WILD Foundation, we could say that Białowieża Forest is actually not really a wilderness at all. The forest has been subjected to a far-reaching digital infrastructure: omnipresent satellite navigation signals.

Towards a new middle of nowhere

A New Middle of Nowhere uses technological means to reinstate a possibility for a dynamic experience of space and a sense of remoteness. I comissioned a mathematician – Alexandre Puttick Riemann – to calculate the precise geographical centre of the Bialowieza National Park on the basis of UNESCO boundary data and a calculation method developed by geographer Peter Rogerson [7][8]. Subsequently, I created an object that emits a GPS spoofing signal with these coordinates: the radio signals from actual satellites are overpowered by emulated signals broadcast at the same frequency. This results in GPS devices in its vicinity indicating a geographical location that doesn’t correspond with the device’s actual location. The object I created is a brass plated replica of a bison dropping which I 3D scanned in Bialowieza forest. Inside is a Software Defined Radio transmitter. On the one hand, this object refers to the dynamic navigational practices that were prominent in pre-sendentary lifestyles: the tracking of animal droppings and footprints. On the other, its brass surface resembles the material of a survey marker, an object that has played a central role in static and absolute approaches to space, especially in the pre-GPS era.

On 25 September 2020, I undertook a clandestine foot journey into the Strict Reserve of Bialowieza Forest to reach the geographical centre of the National Park. There, the object was installed and activated. While it was transmitting, any GPS devices in the area would have indicated the exact centre of the park, regardless of their true location: a middle of nowhere 2.0. After the action, the object was removed and taken out of the park again. No materials were left behind in the forest. The journey was documented with a head-mounted video camera, photographs and a location track record on Google Maps.

[1] Kaplan, C., Loyer, E. and Daniels, E., 2013. Precision Targets: GPS and the Militarization of Everyday Life. *Canadian Journal of Communication*, 38(3).
[2] Koolhaas, R., 2002. Junkspace. *October*, 100, pp.175-190.
[3] https://aroundpoland.eu/index.php/tour/bialowieza-forest-2/
[4] https://bialowiezaforest.eu/
[5] https://www.musement.com/us/warsaw/bialowieza-national-park-day-tour-in-small-group-from-warsaw-47097/
[6] https://www.wild.org/how-we-work/policy-mgmt/defining-wilderness/
[7] https://github.com/arputtick/geographic_centers/blob/master/Geographic_Center.ipynb
[8] Rogerson, P. A., 2015. A New Method for Finding Geographic Centers, with Application to U.S. States. *The Professional Geographer*, 67:4, 686-694

A New Middle of Nowhere has been developed as part of a research residency at Ujazdowski Center for Contemporary Art in Warsaw, with support from the Mondriaan Foundation and the City of Warsaw.

Residency curator: Julia Harasimowicz
Coordinators: Anka Kobierska, Katarzyna Sztarbała
Geographical computation: Alexandre Riemann Puttick
3D printing: Wojciech Lewenstam
Special thanks to Magdalena Siemaszko and Adam Wajrak for their help in locating the bison turd.

Geographic_Center.ipynb

```
## Computing the Geographic Center of Bialowieski
## Park Narodowy for Dani Ploeger’s
## ‘A New Middle of Nowhere’
## Alexandre Riemann Puttick, 2020

## Find the coordinates of the corners of the
bounding box.
BBox =
(x_rads.min(),x_rads.max(),y_rads.min(),y_rads.max())

## Initialize phi and gamma at center of the
bounding box.
phi = np.mean([BBox[0],BBox[1]])
gamma = np.mean([BBox[2],BBox[3]])

## Start of loop.

# List keeping track of center points
centers = [[phi,gamma]]
num_iter = 1000
for iter in range(num_iter):
# Compute azimuthal equidistant projection of
boundary points
proj_points = []
for bd_point in zip(x_rads,y_rads):
cos_c = m.sin(phi) * m.sin(bd_point[0]) + m.cos(phi)
* m.cos(bd_point[0]) * m.cos(bd_point[1] - gamma)
c = m.acos(cos_c)
k = c/m.sin(c)
x = k * m.cos(phi) * m.sin(gamma - bd_point[1])
y = k * (m.cos(phi) * m.sin(bd_point[0]) - m.sin(phi)
* m.cos(bd_point[0]) * m.cos(gamma - bd_point[1]))
proj_points.append([x,y])

# Compute the center of the projected polygon
n = len(proj_points)
x, y = zip(*proj_points)
x = np.array(x)
y = np.array(y)
area_terms = []
x_terms = []
y_terms = []
for i in range(n-1):
area_term = x[i] * y[i+1] - x[i+1] * y[i]
area_terms.append(area_term)

x_term = (x[i] + x[i+1]) * area_term
y_term = (y[i] + y[i+1]) * area_term

x_terms.append(x_term)
y_terms.append(y_term)

area = 0.5 * np.sum(area_terms)
x_cent = np.sum(x_terms) / (6 * area)
y_cent = np.sum(y_terms) / (6 * area)

# Project the center point back to the sphere
surface
rho = (x_cent**2 + y_cent**2)**(1/2)

# longitude of new center
phi_new = m.asin(m.cos(rho) * m.sin(phi) + (y_cent *
m.sin(rho) * m.cos(phi)/rho))

# latitude of new center
denom = rho * m.cos(phi) * m.cos(rho) - y_cent *
m.sin(phi) * m.sin(rho)
numer = -x_cent * m.sin(rho)
diff = m.atan(numer/denom)
gamma_new = gamma + diff

centers.append([phi_new, gamma_new])

phi = phi_new
gamma = gamma_new

phi_cent, gamma_cent = centers[num_iter-1]
phi_cent_deg = phi_cent * 360 / (2 * m.pi)
gamma_cent_deg = gamma_cent * 360 / (2 * m.pi)
print('Longitude and Latitude of Geographical
Center:', phi_cent_deg, gamma_cent_deg)
```

```
Longitude and Latitude of Geographical
Center: 23.868965936536874
52.76620509652369
```