A Franco-Sueco Satellite in America: Transnational Remote Sensing at the End of the Cold War

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In the 1980s, the constellations of power in outer space surrounding Earth had begun to shift. Two vying superpowers – the US and Soviet Union – had so far dominated the Cold War space race of putting satellites into orbit to sense the planet’s surface below. But other countries had begun launching civil satellites that offered competitive data and with finer resolution. One of these remote sensing satellite programmes of the 1980s, the Franco-Sueco Satellite Probatoire d’Observation de la Terre (SPOT), suggest that changes in the use of satellite remote sensing were not only technical but also transnational in character.

‘Remote sensing’ refers to “a practice of gathering data about phenomena without coming into direct contact with these”.1 It is remote sensing because of the distance between the satellite in orbit and the phenomena that it senses on the Earth’s surface.2 SPOT was significant because of how its transnational use shifted emphasis from surveillance by national agencies towards commercial monitoring conducted by various countries. This shift contributed to increased emphasis and application of the data for monitoring and managing environmental changes, which at present date are the basis for numerous policies and estimates on agricultural yields, rates of deforestation, and for spotting trends in urban sprawl.

Sweden’s commitment in the French satellite SPOT provoke three questions for me: Firstly, why did Sweden participate in the French SPOT project? Secondly, how did SPOT relate to or influence American and Soviet satellite remote sensing? And thirdly, what is the legacy of SPOT beyond the arms race of the Cold War? From previous studies I had indications that the Swedish and French remote sensing experts worked closely with colleagues and companies in the US as part of establishing the SPOT programme. So to answer my research questions, I conducted archival searches and interviews not only in Sweden and France but also in the US. The purpose of this was to uncover the transnational character of remote sensing.

History of technology has in the recent decade emphasised the importance of transnational connections for national space programmes.3 Various studies suggest that international interactions among experts influenced national political agendas for technology.4 Technological projects and experts often transcended West-East and North-South divides that informed decolonization, globalization, and the expansion of knowledge economies.5 These processes were under way also during the Cold War and have become more dominant since the 1990s transition from covert to civil and commercial applications of satellites, accompanied by a corresponding environmental emphasis.6

Previous transnational studies of space technology illustrate that despite ambitions to conduct transnational history writing, they are however predominantly organised around nationally based archival visits.7 The risk here is a source bias that naturalizes the nation and national context as unit of analysis. A transnational gathering of sources, by contrast, shifts the analytical lens from singular, national, decisions towards diverse, longer, processes involving many peoples, practices, and places around the world. It is a messier historical understanding with less certain results but one that catches at the ambiguities involved in developing instruments such as satellite remote sensing.

In my archival searches, conducted throughout the autumn of 2016, I primarily consulted the NASA Headquarters Archive, the National Security Archive, and the Smithsonian National Air and Space Archives – all based in Washington DC. These sources indicated American remote sensing collaborations with France and Sweden, respectively, from 1960s onwards. But by the 1980s, the French and

Fig. 1 The SPOT Sensors. SPOT-I was equipped with two optical sensors, each able to observe an area covering 60 x 60 kilometres. These sensors could also be tilted 45 degrees to the side so as to allow for sensing of the Earth’s surface not immediately below SPOT’s orbital trajectory. SPOT handled two modes of sensing, one with multispectral [colour] images at twenty meters resolution and the other with panchromatic [black and white] images at ten meters resolution. It was the most detailed satellites images available for civil use in the 1980s and allowed the French and Swedish to compete with American civil remote sensing. In addition, SPOT’s sensor data could be stored onboard, using tape-recorders, and later be transmitted to a receiving station, like Esrange in northern Sweden.
Swedish experts also attempted to establish their own remote sensing enterprises in the US, which directly competed with American companies who offered similar products.

I supplemented archival searches with interviews, which in turn served to snowball the research towards accessing still more people, personal collections and archives. In sum, I contacted 40 people who had worked for the French subsidiary Spot Image Corporation (SICORP) in Reston, near Washington DC, and the Swedish subsidiary Satellitbild, with agents in Washington DC and New York. These people have saved documents in attics and basements, which detailed collaborations and correspondence between French, Swedish, and American colleagues that provided valuable complementary source to what could be found in the archives.

Erik Emsing, a Swedish consultant contracted by Satellitbild, described fierce competition between Sweden and France to find new markets for remote sensing data. He was successful in securing numerous projects by defining competitive edges in the Swedish use of SPOT (Fig. 1). Emsing knew that most developing countries preferred Swedish satellite expertise to that of French or American, in part due to Sweden’s role as non-aligned state. He also knew that SPOT’s sensors could be tilted sideways, which made monitoring more flexible and a re-sensing of surface that had been covered by clouds during the previous orbit. And finally, Emsing used SPOT’s finer resolution, compared to the previously dominant American Landsat-satellites, to define new applications like detailed forest mapping (Fig. 2). Taken together, Emsing and colleagues were able to establish numerous remote sensing collaborations with developing countries that made use of SPOT’s transnational character.

While the Swedish use of SPOT commanded both respect and resentment from the French colleagues, these sought to use a similar strategy so as to define the Frenchness of SPOT as its competitive edge. Clark Nelson, a geologist and consultant working for the French subsidiary SICORP in Washington DC, were part of the people developing plans for selling SPOT data to the US Department of Defense. SPOT was a civil satellite, but its data could be used for strategic planning, in particular for planning US manoeuvres during the first Gulf War. By mapping the desert regions between Iraq, Kuwait, and Saudi Arabia, American military were able to stage ‘The Left Hook’—a battle-tank operation racing westward, circling north and then southeast — catching the rear of the Iraqi forces off-guard. Nelson ex-

Fig. 2 Sensing Filipino Forest.
This is a map depicting forest cover in the Philippines during late 1980s. It was compiled using SPOT-data as a new basis for mapping forests, monitoring different types of tree coverage so as to measure the extent of deforestation compared to previous maps. Thus, mapping using SPOT-data became a basis for forest management in the Philippines. For detailed descriptions on how the Swedish Space Corporation worked with SPOT to map the Filipino forests, which involved requesting, gathering, processing, transporting, interpreting, and sampling data, in addition to conducting fieldwork in situ, see Gärdebo (2019), pp. 179–191.

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plained that SPOT data proved useful for this and other strategic operations led by the US precisely because the data was neither American nor military but French and commercially accessible. It allowed sharing of remote sensing data to other NATO allies without disclosing data or capacity of American spy satellites.

Emsing and Nelson, along with numerous other people working with SPOT, describe similar situations where the French-Swedish character of SPOT allowed it to find users abroad. But they were also subject to harsher US conditions. When Emsing in the late 1980s helped Satellitebild map the Philippines – at the time a US vassal in Southeast Asia – American authorities demanded that any and all satellite data be subject to inspection at Dulles Airport so as not to disclose military installations. And although Emsing worked with the World Bank rather than the US government, the project deliverables had to change hands on US soil – thus subjecting them to American scrutiny.

And while SICORP sold SPOT data to the US Department of Defense on a commercial basis, the US government demanded that access to SPOT be withheld from enemies, like Iraq, as well as also from those who might trade it onwards, like Pakistan. The American conditions imposed on SPOT suggest both that the commercial market continued to be dominated by state actors also after the end of the Cold War and that access to such data was subject to geopolitical priorities, like NATO allegiance. In effect, these conditions blurred lines between civil and military use of SPOT data.

It is important to note that the establishing of French and Swedish efforts to commercialise SPOT provoked a public debate from late 1980s onwards about who was to have access to satellite remote sensing data. Both the US and Soviet Union made accessible previously classified remote sensing data for commercial use. This was done both as a means to avert criticism of their military hegemony in outer space but also as a real effort to respond to increased competition from other countries, like France and Sweden, in providing satellite remote sensing.

Finally, archival material and interviewees suggest that French and Swedish use of SPOT increased the emphasis on how satellite remote sensing contributed to policies for environmental monitoring, which at present also informs policies for managing environments globally. This is not to say that the sensing of forests have saved these from deforestation, in many cases the opposite is true. But satellite remote sensing, like SPOT, are regularly used to assert what is the state of the environment on a global scale. Until late 1980s, these arguments had primarily been promoted and demonstrated by the superpowers themselves. As other, non-aligned, countries also began promoting the environmental benefits of satellite remote sensing, this type of argumentation gained more credibility. In this respect, too, the present-day environmental discourse around satellites monitoring and managing a global environment is part of the legacy of transnational programmes like SPOT.

Notes and References


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