

Complementary Interdisciplinaryities

The Case of National Agricultural Science in Crete

Fotis Tsiroukis
PhD Candidate

PHIL_OS Project

CONTEXT



This research project involves studying coordination of scientific practices in Greek agricultural research. The main field site is IOSV with headquarters located at Chania, Crete.

IOSV has subsidiary local research centres in different geographical areas (Heraklion, Athens, Kalamata, Lesvos). It belongs to the broader coordinative body for agricultural practices in Greece, Hellenic Agricultural Organization DIMITRA (HAO-DIMITRA).

Further research will involve visits to other sites of research institutes belonging to HAO-DIMITRA (e.g. Thessaloniki), to better understand coordination across different level and scales.

Species Specific Vertical

Vertical subfields and expertises are **dependent** on a specific cultivar.

Research in these labs focuses on all aspects of cultivation, development and preservation of specific local species and cultivars.

METHODS

Philosophy of Science in Practice (PSP) uses a variety of empirical methods from social sciences and anthropology, to study science as a process. These include:

Ethnographic Fieldwork

- Participant Observation
- Action Research

Social Science

- Semi-structured Interviews
- Web-based Survey

ONGOING FINDINGS

MEETING POINTS AND COORDINATION

At the meeting point between a vertical and horizontal interdisciplinary dynamics take place. It is the space for collaboration and **exchange** of data and technology.

- The horizontal dimension allows elements of repertoires (data, techniques, technologies, methods) to travel across research on specific crop species. At a meeting point with a vertical field, they can be adopted by it and shared.
- When verticals incorporate elements of horizontals in their scientific repertoires, they collaborate easier, have more outputs and end up with more resources (and better infrastructures).

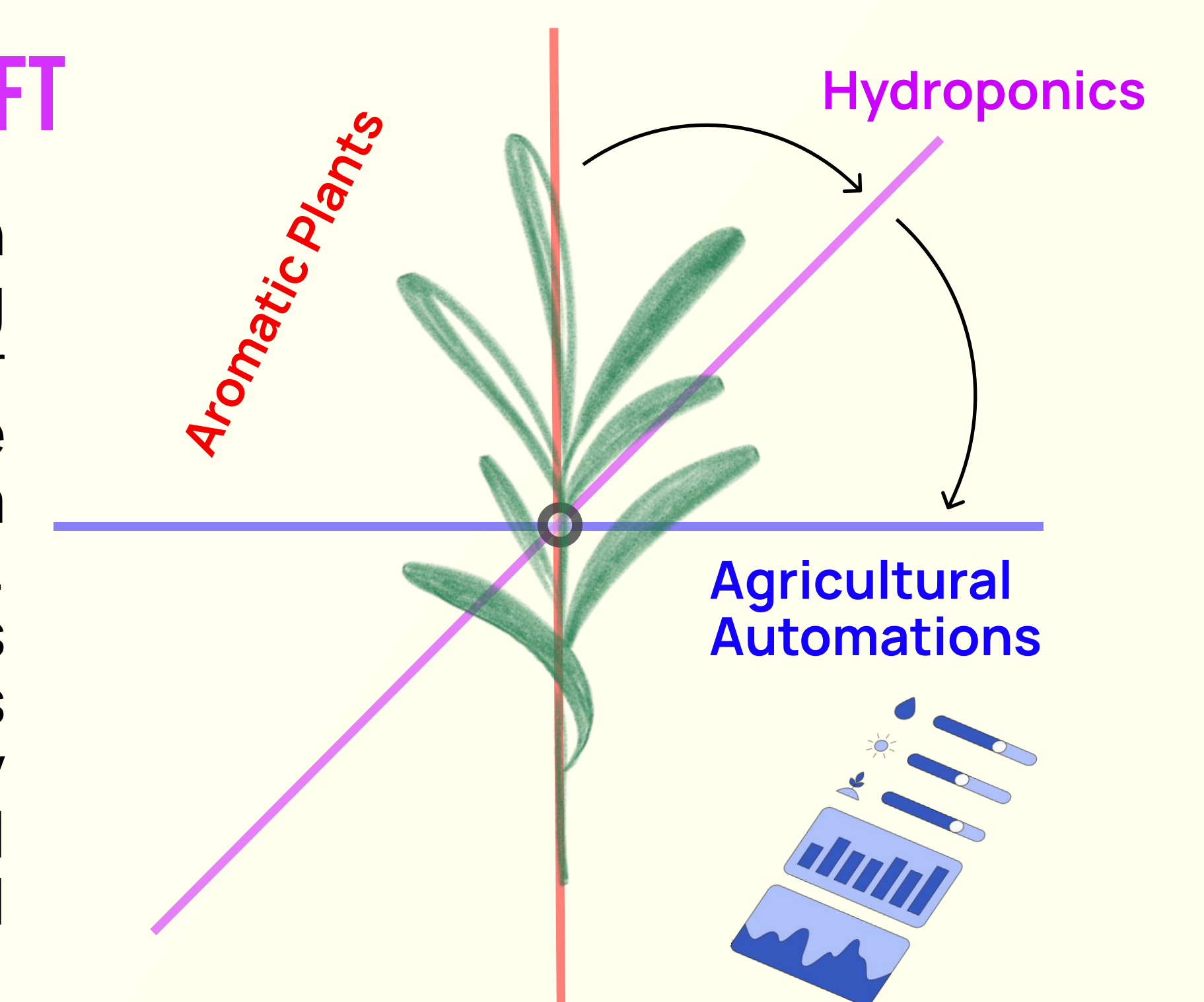
EPISTEMIC-ORGANIZATIONAL SYMMETRY

The structure of fields represented reflect:

- The needs and goals of the institute as a research system (modernization of cultivation & adaptation to climate change).
- Local regional needs and the interactions between the system as research center and as service provider to farmers and local economies.

VERTICAL -> HORIZONTAL SHIFT

Researchers avoid competition and scarcity while gaining flexibility and better opportunities. These are motivators for pivoting from a vertical field to a horizontal. The fact that pivoting takes place reveals that there is something inherently preferable about horizontal specializations in agricultural science.



Cross-Species Horizontal

Horizontal subfields and expertises are **not dependent** on a specific cultivar.

They study biological and geophysical aspects that cut through all plant species and use generic techniques and methods that are applicable to all.

TECHNOLOGICAL

BIOLOGICAL

- Remote Sensing
- IoT
- GIS

- Pest Management
- Water Management
- Soil Science
- Phytopathology

Meeting Point

Modernization

Adaptation

Large institutional goals such as **modernization** of agriculture and **adaptation** to climate change create **attractors** that bind the vertical and the horizontal fields together (e.g. horizontal specialties focus on bringing new technological methods and techniques to cultivation).

This enables multiple sustained collaborations to form between them so as to pursue bigger-scale projects.

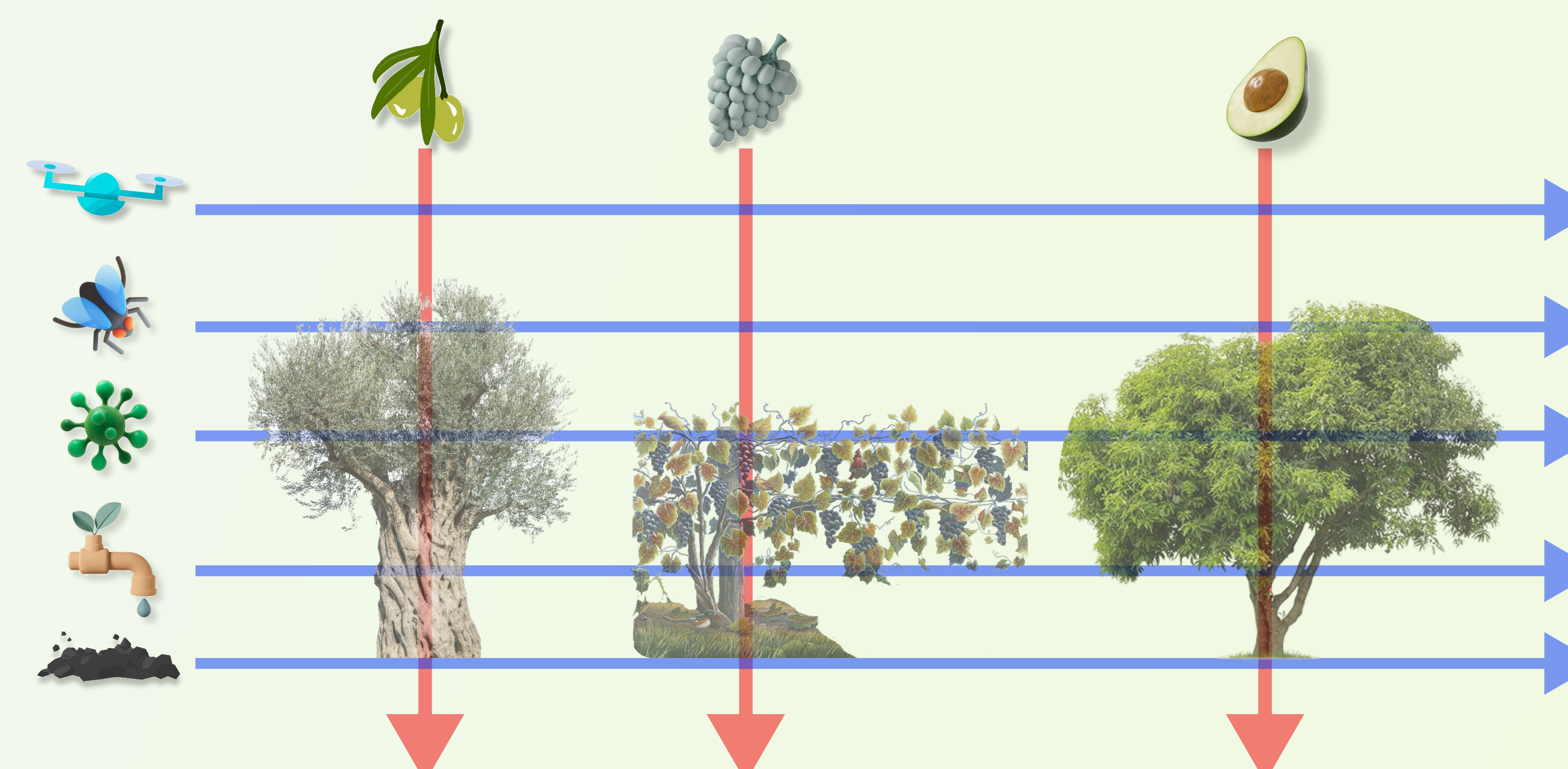
THEORETICAL FRAMEWORK

CROSS-COMPLEMENTARITY

The case study of IOSV revealed a unique pattern of epistemic coordination: complementarity when horizontal and vertical specialties cross each others paths.

- Researchers with different expertises assess their lack of knowledge, equipment and time to make space for the skills and capacities of the other collaborators.
- This dynamic avoids unnecessary competition and redundancy, which is important given the scarcity of resources in Greece.

The physiology, phenotype, genetics and plant-pest relations between **different kinds of crops** changes.



But the same technologies, methods and models can be used across crop species by **horizontal** specialties in collaborations.

FUTURE WORK

- Multisited ethnography to check whether similar kinds of complementarity are found in other research contexts.
- Understanding the role of horizontal specialties in epistemic asymmetries.
- Visual representations for complex interdisciplinary dynamics between >2 collaborating fields.



@FTsiroukis
ft323@exeter.ac.uk