

Diagnosis methodology in amenity arboriculture

The clinical model

Philippe Trouillet

Amenity arboriculture faces a constant dichotomy between the requirement to preserve tree diversity and safety concerns in urban environments.

The hard-to-find balance between these aspects of arboriculture is a challenge that is found at every level of amenity tree management. Finding appropriate answers whilst taking this balance into consideration is a complex process and requires an assessment that combines tool-measured control with an awareness of the possibilities and uncertainties that are inherent in the management of living things.

Does the tendency to opt for the control method leave enough room for a clinical approach and the unwritten professional knowledge acquired through experience?

The role of clinical assessment

The word 'clinical' derives from the French 'clinique', from Latin 'clinicus' and from Greek 'klinikos/klinos', meaning 'leaning towards, laying, leaning against'. The term usually belongs to the medical vocabulary and refers to sick patients leaning or laying in a vulnerable position. Clinical medicine considers the sick person as a whole. The clinician intends to cure the sick person, not the sickness. Therefore, a clinician looks into the singular and complex aspects of each particular situation.

A clinical approach pays attention to clinical signs by observing and interpreting symptoms. The adjective 'clinical' has progressively moved

on from the medical lexicon and has become more frequently encountered in fields such as psychology, the humanities and education. The theory and methodology questions that have arisen in these fields through the clinical approach also stimulate the arboricultural debate. This challenges surveying assumptions, considers the influence of reflective practice applied to professionalism, and takes into account the fine line between the normal and the pathological. 'The clinical approach therefore does not belong to a single field, neither is it a specific field itself, it is an approach that enables change based on the singularity of a situation, that is not afraid of risk or complexity and so produces a sense of what is happening' (Cifali, 2015).

Pathological is normal

If clinicians focus their attention on the sick subject rather than the sickness, the uniqueness of each case diminishes the fine line between the normal and the pathological, sometimes to the extent of making it disappear. For example, cavities and rot were, until relatively recently, considered as predominant threats to the health, resistance and longevity of trees (Davis, Fay & Mynors, 2000). Today, trees are being studied as a whole biological community, not as an individual. Trees are being observed as an ecosystem, host to a specific wealth of

diversity. They are naturally colonised by very numerous organisms, mostly endophytic ones, some of which are identified as pathogenic in principle. The presence and activity of this diversity can generate bio-mechanical and physiological responses (Lebourgeois *et al.*, 2015) that paradoxically may result in making the trees sturdier and longer lasting than those which do not experience the same colonisation.

The position of the clinician

The clinical approach is based on in-depth observation and analysis of individual cases, and it integrates the subjectivity of the observer, as well as the limits of his or her own reasoning. Thus, continuing the Greek etymology of 'clinical', the leaning or laying position is first and foremost that of the clinician himself. The clinician leans towards his own subjectivity and therefore finds himself in a humble but also unstable and uncomfortable position (Ciccone, 2014). His position is one of doubt and uncertainty, based on an ethical approach. This is also the case for any researcher, any scientist, and should also be for any specialist, who should be aware of the limits of his knowledge and the immensity of what is unknown to him.

The clinical approach

Diagnosis using a clinical approach follows three steps (Trouillet & Patry, 2021).

Step 1: Prior to the diagnosis:

Analysing and questioning the context by defining the function of the tree (function, value, benefit to the ecosystem etc.) by taking into consideration its environment (location in a public area, proximity of vulnerable elements) and the goals to be achieved (expectations and the means allocated for the management of this tree).

Considering the tree's history (just as a doctor would take a medical history).

Identifying which temporary diagnosis is to be made (non-analytical). A physiological, mechanical, developmental one?

Choosing which methods are to be implemented.

Step 2: A clinical and analytical diagnosis (hypothesis/observations/interpretations).

Step 3: Making recommendations, or adding complexity to the reasoning and methods if preservation is necessary.

It should be noted that this is not a linear process (Figure 1). A diagnosis is built through

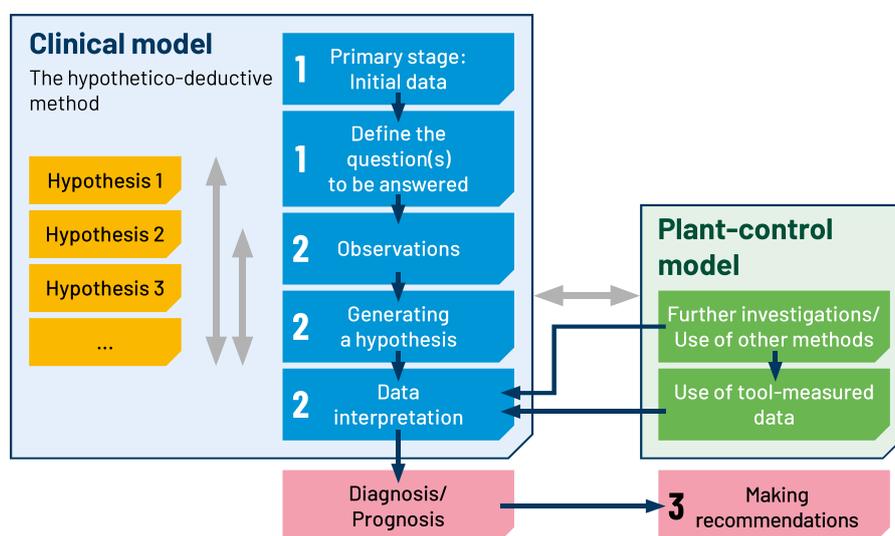


Figure 1: Diagram of a diagnostic procedure including the clinical approach.

a number of journeys back and forth between the identification of the actual issue, clinical observations and primary conclusions that will generate a number of hypotheses. The initial diagnosis made at step 1 is subject to change, temporary, intuitive and must be validated, or not, by analytical reasoning.

The clinical approach is based on hypotheses and deductions. It tends to extend the scientific approach, to include phenomena that cannot be reproduced in experimental conditions (such as clinical diagnostic situations), with the help of specific cognitive attitudes (Favre and Rancoule, 1993).

Attentive observation: the key factor

Attentive/careful observation is fundamental to the clinical approach – it is the essential element: a careful observation of phenomena without interfering. We observe mainly through vision. However, our other senses are also involved; we observe with all five. Attentive observation is a tool in itself, a method to comprehend the clinical situation. With rigorous observation, one can always collect a wealth of data, whatever the clinical situation (Ciccione, 2014). However, to observe phenomena, it is necessary to know what one is looking for. This is why fundamental knowledge of physiology, morphology or botanics is essential. In 2001, Drénou was already debating whether the tendency to increasingly rely on measurement tools was disadvantaging in-depth knowledge of elementary subjects. Twenty years down the line the question remains unanswered.

In arboriculture, however, many elements cannot be observed, for example the roots, the soil and the internal condition of the wood. The condition of these unobservable elements is assumed from the observation of what their condition implies: symptoms, dynamics, physiological and mechanical response. What cannot be observed is therefore subject to interpretation. We must keep in mind that any observation, even an obvious one, is constructed through perception and each one of us may perceive different things. Perception is not reality. Remembering the weight of subjectivity is essential to the clinical approach and to any scientific approach in general.



The clinical model applied to arboriculture

Clinical arboriculture, or the clinical surveying model, is faced with the differences in values and interests between the various people involved in the management of the trees in question. The tree ‘manager’

may have different expectations than a consultant, an arborist or the general public that is surrounded by the particular tree population. Safety concerns, leading to the quest for scientifically measured, tangible data, can be obstacles to the recognition of clinical arboriculture and may favour a scientific model that relies exclusively on quantifiable data (the positivist paradigm).

There is no need, however, to think of these two models as being in opposition to each other. The clinical approach is a global procedure for tree evaluation and allows us to limit the tendency towards opinion or conviction-based methods (a dogmatic attitude). It also avoids excessive use of instruments and in many cases diagnostic errors. However, this initial procedure can also lead (without contradicting itself) to the conclusion that tool measurements and further investigations are required as a control method. Figure 2 presents the surveying models and their criteria (Trouillet, 2020).

The most acclaimed amenity arboriculture experts are first and foremost great clinicians, and the wider their experience, the less the

Expertise model	Arborist Evaluator	Criteria	Science paradigm	Prescription
Plant-control	Expert	The control The measurement The quantification The tool-based measurement The certainty	Positivist	Control prescription, refers management decisions
Clinical	Consultant	The complexity The clinic The singularity The qualifier The uncertainty	Phenomenological	Prescription assessment: Delegates management decisions. Informs, accompanies

Figure 2: Table of expertise models and their criteria.

requirement for tool-measured data. What limits the clinical model is generally a lack of experience, lack of knowledge, pessimism or an emotional approach. Lack of methodology or of essential knowledge is often found at the root of excessive safety concerns and the excessive use of instruments, and can lead to a defensive attitude. Indeed, according to Fay (2007), a practitioner may come to an irrelevant conclusion as a form of protection against litigious situations. This is often because of a number of tendencies that have not been sufficiently taken into consideration.

Conclusion: the benefits of self-reflection

The clinical model is first and foremost a scientific approach to diagnosis, through the method of establishing evidence, the quest for knowledge, an ethical attitude and the constant self-questioning of one's professionalism. As tree management faces the permanent tension between safety and preservation, it must be remembered that tree-risk assessment is more of an art than a science, and that experience plays a major role in the decision-making process (Kane and Ryan, 2003).

Clinical arboriculture has an important part to play in the decision-making process, and it helps the clinician in charge of reading the tree's history to understand its dynamics, the issues and the complexity of its management while integrating his or her own professional approach. To better understand this, it seems that introspection, which

goes beyond the professional experience of the task, is necessary in order to better identify one's own cognitive behaviour, to be aware of one's thinking frameworks (paradigms) and to understand one's abilities. This self-development process enables self-regulation and a state of constantly adapting one's scientific culture.

Thus, acquiring an epistemological awareness of one's frame of mind as a practitioner could promote a tendency towards a 'non-dogmatic paradigm' and would allow one to reconsider assumed 'facts' no longer as proof that can be held as a general rule (dogmatic paradigm) but as a hypothesis reached through scientific reasoning and based on elements of proof, that is to say, on more up-to-date and socially recognised facts crossed with clinical observations, sometimes contradicting current models (Trouillet, 2020).

The clinical method opens the way for reflection and favours the introduction of a complex and 'multiple referenced' model. It therefore offers a solid and rigorous method that helps the decision-making process and, without contradiction, identifies the potential requirement for plant-control methods. However, it raises questions about the subjectivity of the evaluators. In order to move towards more objectivity and identified procedures, the community could explore the Clinical Predictive Rules (Scores) methods, such as those used in medicine. Clinical arboriculture today offers us each the chance to take account of the effect our own personality or presence has on what is

being investigated (Schön, 1994), which sheds light on the multiplicity of possible theories, but also reminds us that the tacit knowledge of practitioners (a knowledge nested in professional experience) is the base of a relevant theorisation. The clinical approach seems to contribute to the blurring of the lines between expert surveyor and competent operator: the latter possesses experience and knowledge which are not to be ignored.

Thanks

Proofreading and points for improvement: Christophe Dréno & Olivier Dambezat. Translated from French (France) by Nadia Gharnougui & Olivier Dambezat. Improvement and corrections by Sarah Bryce & Simon Richmond.

This research is not funded by any agencies in the public, private, commercial or non-profit sectors.



Philippe Trouillet is a consultant and lecturer with a master's degree in humanities and social science. He specialises in education sciences and the engineering of organisational systems. He founded Ceiba (www.ceiba-conseil.com) in 2015, and since 2019 he has been working as a consultant and trainer for SNCF in the context of tree risk assessment. ceiba.conseil@gmail.com

Bibliographical references

Bachelard, G. (1938). *La formation de l'esprit scientifique*, Librairie philosophique Vrin.

Ciccone, A. (2012). La pratique de l'observation, *Contraste* 36: 55–77

Ciccone, A. (2014). L'observation clinique attentive, une méthode pour la pratique et la recherche cliniques, *Revue de psychothérapie psychanalytique de groupe* 63: 65–78.

Cifali, M. (2015) dans l'ouvrage collectif *Réfléchir sur la pratique, un levier pour la formation professionnelle des enseignants*. Brussels, De Broeck

Crozier, M., et al., (1995). *Réfléchir sur la pratique, un levier pour la formation professionnelle des enseignants*. Brussels, De Broeck.

Danvers, F. (2010). Autour des mots de la formation 'Clinique', *OpenEdition Journal*.

Fay, N., Mynors, C., Davis, C. (2000). *Veteran Trees: A Guide to Risk and Responsibility*. Peterborough: English Nature

Dréno, C. (2001). *Vitalité et solidité de l'arbre, choisir les méthodes de diagnostic*, Cahier d'arbre actuel 6, IDF.

Favre, D., Rancoule, Y. (1993). Peut-on décontextualiser la démarche scientifique? *ASTER* 16. Modèles pédagogiques.

Fay, N. (2007). Towards reasonable tree risk decision-making, *Arboricultural Journal* 30: 141–161.

Foucault, M. (1963). *Naissance de la clinique*, Paris: PUF.

Herzig, L., et al. (2011). Développement, implémentation et utilisation pratique d'un score diagnostique, *Revue médicale suisse* (revmed.ch) 295.

Kane, B., Ryan, D. (2003). Examining formulas that assess strength loss due to decay in trees: woundwood toughness improvement in red maple (*Acer rubrum*), *Arboricultural Journal* 29(4): 209–217.

Lebourgeois, F., Dréno, C., Bouvier, M., Lemaire, J.

(2015). Caractérisation de la croissance des chênaies pédonculées atlantiques dépérissantes: effets des sécheresses et relation avec l'architecture des houppiers, *Revue forestière française* 67(4): 333–351.

Revault D'Allonnes, C., et al. (1989). *La démarche clinique en sciences humaines*. Paris: Dunod.

Schön, D.A. (1994). *Le praticien réflexif: à la recherche du savoir caché dans l'agir professionnel*, Montréal: Éditions logiques.

Trouillet, P. (2020). L'identification des conditions à remplir pour construire une formation de haute qualité à destination des gestionnaires, des prescripteurs et des formateurs en arboriculture ornementale. Master 2 – Sciences de l'Éducation RISO (Responsable d'Ingénierie des Systèmes d'Organisation), Université Paul Valéry – Montpellier 3

Trouillet, P., Patry, G. (2021). 'Le haubannage'. In Dréno, C., *La taille des arbres d'ornement*, 2nd edn. Paris: CNPF.