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Science Fiction vs. Scientific Fiction in France: From Jules Verne to Rosny Aîné

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When discussing the 19th-century "roots" of modern French SF, literary historians tend to cite Jules Verne's "Voyages Extraordinaires" as the generic starting point of this particular brand of fiction. Such assertions suffer from reductionism; they are almost always based on a number of loosely defined thematic resemblances rather than on any rigorous examination of the narratological functioning of these texts. Instead of a primitive variant of a later genre (satisfying the literary historian's need for origins and species continuity), Verne's "romans scientifiques" should be viewed as what they were and are—i.e., the first important examples of *scientific* fiction in Western literature, quite distinct from SF.

The difference between these two literary cousins might be most succinctly illustrated by analyzing the role played by *science* itself in the discursive structure of these texts: i.e., the manner in which a sustained scientific discourse is grafted onto a literary one. Scientific fiction (as in the case of Verne) presumes a predominantly *pedagogical* function for such discourse; it is oriented towards the implantation of more or less factual scientific knowledge. SF (in the case of Robida and Rosny aîné, for instance) utilizes science—or, quite frequently, pseudo-science—for purely *fictional* purposes; it is used principally as a catalyst for plot progression and special effects, as a verisimilitude-builder, and as a means for creating a kind of Brechtian "estrangement" in the reader. The didactic discourse of scientific fiction rarely varies: it is linear, accumulative, reductive, "non-distancing," highly mimetic, generally nominative, and deductively one-dimensional in its hermeneutic structure. The fictional discourse of SF, by contrast, utilizes a wide variety of different possible reader-text dialectics, reflecting the heterogeneous nature of this genre. For example, in its satiric mode (e.g., Robida), it is playfully non-mimetic, purposely oxymoronic, and socially—as opposed to scientifically—proselytetic in tendency. In its fantastic mode (e.g., Le Rouge), it is obscurantist, impressionistic, and sometimes even metaphysical. In its speculative mode (e.g., Rosny aîné), it is most often non-mimetic, paradigmatically pluri-dimensional, and inductive in its hermeneutic structure. In all cases, SF does not seek to teach science through/with fiction, but rather to develop *fiction* through/with science. The *raison d'être* of science in the narrative process itself shifts from primary position to secondary, from subject to context. It seeks no longer to address the reasoning intellect but rather the creative imagination.

To illustrate these general principles, I now propose to examine somewhat more closely this diachronic evolution of scientific fiction into science fiction by considering some French texts from the late 19th and early 20th centuries—texts drawn from works by the above-mentioned authors. My discussion will focus primarily on the slowly changing role of science in the signifying structure of these texts. And I will argue for using the narratological parameter of *didactic discourse* as a kind of litmus-test for distinguishing between these two scientifico-literary genres.

First, let us consider a rather typical passage of scientific pedagogy from Verne's "Voyages Extraordinaires" (the selection of these examples being dictated as much by their brevity as by their typicality—most of Verne's pedagogical passages are much longer, often continuing for many pages at a time). The following is taken from *De la Terre à la Lune* (1865; *From the Earth to the Moon*), where Michel Ardan is explaining the technical feasibility of a continuous fresh air supply inside Barbicane's space capsule:

> The matters of food and lighting having been resolved, there remained the question of the air supply....It would be necessary to constantly renew the air inside the capsule. How? By a very simple procedure invented by Reiset and Regnault and outlined by Michel Ardan during the discussions of the meeting.
>
> As we know, air is composed principally of 21 parts oxygen to 79 parts nitrogen. And what occurs during respiration? A quite simple phenomenon. Man absorbs the oxygen of the air...and exhales the nitrogen. The exhaled air loses approximately 5% of its oxygen, replaced by an equivalent amount of carbon dioxide which is produced by the combustion taking place between the blood and the oxygen inhaled. So, in an enclosed space and after a period of time, all the oxygen is replaced by carbon dioxide, a gas that is essentially toxic.
>
> The question comes down to this: ...(1) to replenish the oxygen, (2) to get rid of the exhaled carbon dioxide. Both are easily accomplished by means of potassium chlorate and potash.
>
> Potassium chlorate is a kind of salt that takes the form of white flakes; when brought to a temperature above 400 degrees, it changes into potassium chloride, and the oxygen that it contains is released....So much for replenishing the oxygen. As for the potash, it hungers for the carbon dioxide mixed in the air, and one need simply shake it to absorb the former and create potassium bicarbonate. So much for the carbon dioxide.
>
> In combining these two procedures, one can be sure that the vitiated air in the capsule would be made breatheable. Two chemists, MM. Reiset and Regnault, have successfully experimented with this. But, it must also be noted that until now all their experiments have taken place 'in anima vili.' However precise their results, exactly how this procedure would work on humans was as yet unknown. (23:306-09—this and all other translations are mine)

This passage is quite representative of Verne's scientific pedagogy. It is integrated—or, rather, inserted *en bloc*—into the text through authoritative indirect discourse using one of the main characters of the novel as a discursive stepping-stone. The explanation is clear, concise, and comprehensive, and it is structured very logically for immediate and easy understanding. And the facility of the "lesson" itself is underscored again and again. The textual function of the names of the scientists is to supplement the technical authoritativeness of the theories presented while also serving as a kind of *effet de réel* to build verisimilitude. Further, the inclusion of certain other phatic devices such as the "As we know" (extremely typical of Verne) enhances the persuasiveness of the text by assuming an *a priori* knowledge of the fundamentals of chemistry on the part of the reader/listener. But, of course, this does not prevent the narrator from reiterating just the same all the scientific details of what "we" supposedly already know! And the concluding reference to the "still-in-the-experimental-stage" nature of the proposed technology serves to anchor the passage in historical actuality as well as to add a measure of suspense to the ensuing plot. It acts, moreover, as a sort of authorial insurance policy for Verne himself, in case this particular piece of technological extrapolation never materializes in the real world (as it never would, of course, because—"as we know"—Verne's basic premise concerning the chemical composition of air is incorrect: he, and Mssrs Reiset and Regnault, are proceeding from the chemical principles formulated earlier in the century by Lavoisier—principles proven erroneous only in the 1880s and 1890s, about 20 years after Verne wrote *De la Terre à la Lune* and after which he no longer mentions the feasibility of such a device).

The next quotation is from Paul d'Ivoi's *La Diane de l'Archipel*, also known as *Jean Fanfare*, published in 1897 as the fourth novel of d'Ivoi's continuing series called (very suggestively) the "Voyages Excentriques." The scientific pedagogy displayed in d'Ivoi's narratives, while less overtly elaborated than in Verne's (i.e., occupying less textual "space"), continues nevertheless to play an important role in his individual fictional recipe. Following the same general "travel and learn" narrative format used in Verne's immensely successful "Voyages Extraordinaires," these novels were part of the massive influx of didactic adventure stories (oriented principally towards youth) that penetrated the French publishing market during the final years of the 19th century and the pre-World War I years of the 20th. As we shall see, the 21 novels of d'Ivoi's "Voyages Excentriques" provide both a thematic and narratological transition between Verne's generally cautious scientific didacticism and the more fanciful fictions of Le Rouge, Robida, and Rosny aîné.

In this excerpt, the heroes are being introduced to the marvels of the "Karrovarka," a kind of armor-plated home-on-wheels (a typically Vernian vehicle). Powered by electricity, it features, among its other wonders, an air filtration system similar to that previously described in *De la Terre à la Lune*:

> 'For the moment, dear sirs,' he said softly, 'I will add only this: You can be assured of hygienically pure air in your sleeping quarters. So that its purity remains at 100%, it is essential that the air not vitiate like in the bedrooms of people who are sedentary....In order to accomplish this, I crack open the valve of this metal receptacle attached to the rear partition. It's a tank of oxygen. This salutary gas will flow drop by drop, replacing that used by your lungs. There are imperceptible perforations in the floor of your compartment, connecting it with one in the rear of the Karrovarka. Located therein are trays of potash which, as we know, is hungry for carbon dioxide and exerts a veritable attraction on it. In other words, your air will automatically cleanse itself of those products of combustion which are likely to vitiate.'
>
> 'Marvelous!' exclaimed Jean. (2:2:224)

Here, the parallels with Verne's text are unmistakable—even to the epithet "hungry" and the "as we know" of the ninth line, the latter perhaps directly addressing the reader's recall of Verne's novel of 30 years earlier. But what is truly interesting is the extent to which this same piece of scientific pedagogy is now *muted* and made *secondary* to the fiction itself. The technology portrayed is no longer essential to maintaining the lives of the protagonists; it is now a simple hygienic convenience. The chemical composition of air and the mechanics of respiration are no longer explained in detail but simply passed over as "this salutary gas" and "those products of combustion." And Verne's "potassium chlorate," originally brought along to produce oxygen, completely disappears—to be replaced by a "tank of oxygen." Could it be, given the date of the text, that d'Ivoi was aware of the scientific advances made in this field since Verne's time? Perhaps. By 1895, the British inventor William Hampson and the German physicist Carl Lindé had discovered how to liquefy oxygen and it had already entered into common commercial use. But it is much more likely that d'Ivoi simply wished to relocate the focus of his text away from scientific didacticism per se and more on the *results* which such science could offer his "excentric" fictions in terms of exoticism, plot progression, and ideological phatics in general. In other words, d'Ivoi chose to adopt Verne's overall narratological prototype but then toned down its (sometimes pedantic) pedagogical character.

This phenomenon—where the role of science is changed from subject to object, from being the primary textual subject into being an object which functions principally as an accessory to the plot—is even more pronounced in many of Gustave Le Rouge's novels. The following passage is from *La Princesse des Airs* (1902; *The Princess of the Skies*), the title of which is taken from the name of a flying machine that incorporates the futuristic technology of Verne's balloon and airplane narratives, and more. Among its other gadgets, one finds a similar air-supply system:

> The outer shell of the *Princess of the Skies* was constructed in such a way that it could be hermetically sealed.
>
> A system of rubber membranes could be placed along the edges of the doors, shutting off all contact with the exterior atmosphere.
>
> This mechanism had been adopted so as to permit flying at great altitudes.
>
> In that event, the travellers would be able to breathe thanks to liquid air; huge tanks containing chemical substances similar to potash would be placed here and there to absorb the carbon dioxide produced by respiration and to maintain the purity of the air in the cabin. (2:5:259-60)

Here, however, the bottled oxygen has become "liquid air" and the absorption chemical has become an unnamed substance described as "similar to potash." "Liquid air" was the common, non-scientific name given to liquefied oxygen around the turn of the century; and by using such a term, Le Rouge is not only moving his discourse from a technical to a vernacular mode, but is also taking full advantage of the exotic oxymoronic qualities that the word itself adds to his fiction. Le Rouge tends to come back to this particular item over and over again throughout his narrative wherever a *deus ex machina* scientific solution is needed to shore up verisimilitude or to heighten melodrama.

For example, in his initial description of the *Princess*, the inventor Alban points out:

> The aircraft would remain airborne only because of its speed. As soon as it was slowed down, it would, because of its massive weight, fall like a stone. I solved this problem by installing around the perimeter of the aircraft a series of steel cylinders filled with liquid air with the valves pointing downward. When I release the liquid air, the upward thrust it delivers to the aircraft allows the *Princess* to land with the grace and the gentleness of a butterfly alighting on a flower. (1:3:75)

Here, liquid air serves as a kind of retro-rocket to break the fall of the landing aircraft. And in the following passage, where the vehicle is forced to make a crash-landing in the Himalayas and a youthful passenger is on the brink of death due to injuries received, it is again liquid air that saves the day:

> 'All that's left to try,' thought Alban, 'is a high energy procedure, but it might be dangerous....Bring me a cylinder of liquid air....The temperature of 400 degrees below zero that it takes to change air from its gaseous state to liquid will undoubtedly have a sufficiently energetic effect on Ludovic to help him regain consciousness. Liquid air, by the instantaneous and dramatic shock that it gives to organic tissue, is the only thing that can bring him back to life.'
>
> The right arm of Ludovic was bared, and a first application of the liquified gas was attempted.
>
> The child's nervous system shuddered and his heart began to beat more rapidly.
>
> His pulse, until now imperceptible, became normal.
>
> By the fifth application, Ludovic opened his glazed eyes...the child was saved! All he needed now would be some rest and care. (2:5:267)

The application directly to the skin of a "high energy" cold-pack of minus 400 degrees (Centigrade) brings the young man back to life. Indeed! Quite obviously, Le Rouge crosses here (and elsewhere in his text) the boundary separating science from magic. But it is interesting to note that the narrative mechanism involved is always the same: an incarnation of advanced scientific technology—very mysterious in nature and totally unexplained as to its physical properties—is summoned up as a kind of textual "magic wand" to create verisimilitude and to expand the thematic possibilities of the plot. Le Rouge's work is particularly rich when studying this fictional shift in the portrayal of science from pedagogy toward "special effects." His novels stand as a kind of thematic (and structural) intermediary between the Verne-d'Ivoi narrative model and those of Robida and Rosny aîné.

Although Le Rouge still continues to anchor his "imaginary voyage" fictions in didactic (or pseudo-didactic) scientific passages such as this one, he is also shifting what had been the traditional relationship of the reader to this type of text onto new cognitive ground. Here it is not yet a question of the reader's constant confrontation with a host of non-mimetic referents or seemingly empty signifiers—as we shall find in Robida and, even more so, in Rosny aîné. But in Le Rouge's texts, the evolution towards this new "SF" discursive configuration is already palpable.

The position of Albert Robida in this evolution is a curious one: the less one is familiar with the actual texts, the more one tends to identify Robida's technological romances with Verne's "Voyages Extraordinaires"—especially when both are viewed in retrospect as early variants ("grandfathers") of modern SF. In reality, they are very different. The distinction might be most simply described as follows: the scientific didacticism, a fundamental structural feature of Verne's fiction (and still used, although in a quite different manner and for other narrative ends, by authors such as d'Ivoi or Le Rouge), is completely absent from Robida's texts. The futuristic technology portrayed by Robida is always a "given," neither explained nor even made to appear in any way wondrous or supernatural. But Robida's fanciful extrapolations cannot be simply categorized as fantasy, in the true sense of that word. For, in terms of verisimilitude and mimesis, his novels are solidly anchored in a quite realistic (from a 19th-century perspective) representation of daily and family life *à la* Balzac's "Scènes de la vie privée" or "Scènes de la vie parisienne."

It is this rather oxymoronic (and often hilarious) juxtaposition of futuristic technology and 19th-century life-styles, beliefs, and social institutions that characterizes the vast majority of Robida's fictions: husbands and wives now argue about their daughter's dowry over the "telephonoscope," traditional weekend outings to the country are done via the "pneumatic tube" or "aircoach," the bourgeois home is decorated with artistic works of "photo-paintings" or "galvanosculpture," and so forth.

The following, quite typically "Robidian," passage is taken from the opening scene of *Le Vingtième Siècle* (1883; *The Twentieth Century*) and will serve to illustrate this bi-polar character of his narratives:

> The month of September 1952 was drawing to a close. Summer had been magnificent; the sun, cooler now, bathed the golden days of autumn with a soft and caressing glow.
>
> Airship omnibus B, whose route went from the central Tube station on boulevard Montmartre to the aristocratic suburbs of Saint-Germain-en-Laye, was following the winding lines of the outer avenues and cruising at the statutory altitude of 250 meters.
>
> The arrival of the train at the Brittany Tube had quickly filled a dozen airbuses parked above the station. A swarm of aircabs, veloces, skiffs, flashes, and baggage tartans (whose heavy-winged tugs that can barely do 30 kilometers an hour) bustled to and fro....
>
> The passengers of Airship omnibus B were, for the most part, Parisian businessmen coming home with their families from their villas at Saint-Malo or from little picnics in the rocks of Brittany. This was obvious by the many empty picnic baskets, the plant collections, and the shrimp nets of the children....
>
> Seated gracefully on the folding stools of the rear platform were three young girls dressed in high school uniforms....The two brunettes were daughters of the billionaire banker Raphael Ponto, one of these stars of the Stock Market around whom gravitates a veritable host of inconsequential millionaires, like so many satellites. The blond girl, named Hélène Colobry, was an orphan and a charge of the banker Ponto, who was a distant relative of her family. (1:1-3)

The initial shock produced by the mention of the year "1952" in the incipit of this text (and the late-19th-century reader's accompanying expectations of a radical "otherness" in what is to follow) are promptly mitigated by the reassuring and quite poetic description of the changing seasons—a common literary motif and a solid touchstone for establishing the "plus ça change, plus c'est la même chose" tone of the entire fiction. But this comforting Romantic topos is then followed by a rapid succession of textual "nova"—a series of totally non-mimetic technicisms and indirect referents which, one might assume, would serve to substantiate the reader's earlier anticipations concerning this tale of the future. But in reality, they provide the reader with only mildly alienating stepping-stones to his or her visualization of this new world. Terms such as "Airship omnibus B," or "aircabs" (portmanteau words, combining the old with the new), "Tubes" (an English term for underground railroads, perhaps already in use during this period, but still quite exotic, especially when later expanded to "Brittany Tube"!), "the suburbs of Saint-Germain-en-Laye" (a comfortably recognizable toponym, like that of the "boulevard Montmartre," but now the suburb is seen as a part of the city proper, indicating—in an indirect fashion—how immense Paris has become)—all these references gently ease the reader into the realm of a distant tomorrow. Further, the nautical names of these many strange vehicles—"airship," "skiffs," "tartans," and "tugs"—provide a concrete metaphorical link enabling the reader to associate this scene with the standard seaport motif and thereby to assimilate it without difficulty (although the terms chosen are, ironically and most likely deliberately, archaic ones). And on the purely denotative level, even the most unusual of these vehicles—"veloces" and "flashes"—seem to literally define themselves. Finally, mentioning that the heavy-winged "tugs" fly "barely" 30 kilometers an hour functions, at least within the 19th-century sociolect, as a kind of reverse anachronism of satiric humor, an "inside joke" between author and reader, considerably lightening the enumerative and technical tone of the passage as well as indicating (again, in an oblique manner) how speed is a purely relative matter.

Continuing its practice of oscillating between the hyperbolically futuristic and the commonplace, the text then focusses on the passengers. In spite of their milieu and their having apparently travelled great distances for a "little picnic" (another oblique reference, revealing the social implications of air-travel, rendered with humorous irony by the use of the word "little") a quite typical 19th century family is portrayed—right down to their empty picnic baskets and the other standard paraphernalia of such outings. And among the three high-school girls (complete with uniforms) is one who is undoubtedly destined to become the heroine of the story: in proper 19th century novelistic fashion, she is an orphan and blond. Lastly, mixing the same indirect reference procedure with humor and an astronomical metaphor, Robida characterizes Raphael Ponto as a billionaire banker and one of those shining stars of the stock-market "around whom gravitates a veritable host of inconsequential millionaires." If the financial criteria have changed, readers say to themselves, the social ones certainly have not!

Thus Robida's scientific technology is rooted neither in pedagogy nor in the need to justify the verisimilitude of his heroes' and heroines' actions. Nor, however, can it be said to be totally gratuitous: it serves as an effective

fictional spring-board for humorous social commentary and satire. The reader is never expected to truly believe in the scientific marvels of this future Earth, but rather to maintain one foot in the present and to continually compare the two societies in question.

On the other hand, this procedure does serve certain implicit pedagogical ends—if not for the instruction of science, at least for the acclimatization of humankind *to* science. And it does so in two ways. First, by the very nature of the narrative itself, the 19th-century reader is led to conceive of a world much like his or her own but now filled with new-fangled gadgets the functioning of which he or she can't possibly understand—undoubtedly very evocative of his or her own experiences during an historical period that witnessed the advent of telegraph, electric lights, phonographs, and motorcars. But the text also implies that such an understanding doesn't really matter. The basic social structures are the same, the human problems are the same, and this potentially alienating technology appears to be fully integrated into the daily lives of those fictional characters who, themselves, are very much the same. Further, if the technology itself is alternately portrayed as comical, problematic, or even dangerous (especially in its military applications), it is most often shown to be *subordinate* to Man. It is, as always, *human nature* that dictates its use and misuse. Hence, although Robida is traditionally revered as an imaginative ancestor of modern SF (which he definitely is, at least for some brands of SF), the "let's-look-at-ourselves-through-foreign-eyes" dynamics of Robida's narratives also tend to identify him as a direct literary descendant of writers of social satire such as Montesquieu and Voltaire.

With the scientific fantasies of J.-H. Rosny aîné, however, we enter the world of SF proper. Correspondingly, intertextual overlaps with the narratological character of Verne's "Voyages Extraordinaires" begin to grow weaker and progressively more tenuous. Not only is there a complete absence of textual didacticism and of the quasi-scientific, credibility-building explanations of technology (as noted in d'Ivoi and Le Rouge), but also the final link with the mimetic representation of reality is broken. Readers are thrust fully into the realm of the alien "other" and are required to reconstruct their referential coordinates *ex nihilo* in order to assimilate the text. This "filling in the blanks" procedure becomes the predominant reading mode for this brand of narrative—most often unaided by the text's semantic content or the visible presence of a narrator. And the traditional "imaginary voyage" narrative format now becomes a (sometimes disorienting) journey into the strange world of seemingly absent paradigms and non-referentiality.

The following passage, found at the outset of Rosny's *La mort de la Terre* (1910; *The Death of the Earth*), is among the first such texts featuring this new narratological formula:

> The terrible North Wind had become silent. It's harsh voice had, for two weeks, been filling the oasis with fear and sadness. It had been necessary to erect the storm-wall and to implant the hooks of elastic silica. Finally, the oasis was beginning to cool down.
>
> Targ, the guardian of the Great Planetary, felt one of those sudden pangs of joy which brightened men's lives during the holy times of Water....His face was dark and swarthy, his eyes and hair as black as anthracite. Like all of the Last Men, he had developed a very large chest and a shrunken belly. His hands were delicate, his jaw small, and his limbs indicated more agility than strength. Clothing of mineral fibers, as supple and warm as ancient wool, snugly encased his body....
>
> Since the Great Planetary was located on the border between the oasis and the desert, Targ could observe the sinister landscape of granite, silica, and minerals. A plain of desolation stretched out as far as the foothills of the barren mountains, devoid of glaciers, waterholes, blades of grass, or even patches of lichen. In this desert of death, the oasis, with its rectilinear groves and metallic houses, seemed like a wretched stain.
>
> Targ felt the weight of the vast solitude and the implacable mountains. He lifted his head melancholically and looked at the conch of the Great Planetary. The conch spread its sulphur corolla towards the jagged mountaintops. Made of arcum, as sensitive as the retina of an eye, it recorded only those rhythms emanating from the other oases far away, and it was calibrated so as to squelch those that the guardian need not answer. (1:126-27)

The narrative voice alone of this opening passage is sufficient to establish its "other world" and "other time" tonality, which is subsequently concretized by the semantics of the text's content. The capitalization of words such as "North Wind," "Great Planetary," "Water," and "Last Men" lends a kind of primitive mythological and/or epic quality to the scene described, and the repeated tribal-like anthropomorphizing of the elements enhances this impression. But the identity of the narrator, obviously indigenous to this place and time, is not (and never will be) revealed to the reader.

Further, this primitivism is strangely juxtaposed with signs of futurism: the association of "oasis" and "the holy times of Water" with the title of the novel, along with the altered physiology of Targ himself (who is one of the "Last Men") clearly places the events in a distant tomorrow—at the end of human supremacy on Earth. Thus, the reader surmises, this must be a tale of the far future where humanity has devolved into primitivism and now lives in isolated oases as the world turns to dust. Correct. But it is only by combining a number of disparate textual references and filling in a variety of paradigmatic "blanks" that the reader can, inductively, arrive at this conclusion. This "oblique" method of referentiality, first noted in Robida, serves here to reconstruct an entire imaginary world, instead of a simple linear extrapolation of the known.

But the signifying process in this text then becomes more complex as the reader encounters such references as "hooks of elastic silica," "[c]lothing of mineral fibers, as supple and warm as ancient wool," and "metallic houses," not to mention the mysterious "Great Planetary" itself—this "conch" that "spread its sulphur corolla towards the jagged mountaintops" and which was "made of arcum, as sensitive as the retina of the eye." The phrases in the first group, although quite non-mimetic in nature, are nevertheless similar to Robida's portmanteau words: while semantically juxtaposing the old with the new, they generate concrete paradigms and visual associations that, although somewhat odd, are still able to be rationalized by the reader. The second group, on the other hand, pushes this hermeneutic operation to its breaking point, nearly short-circuiting the signifying process itself. On the

semantic level, for example, the inorganic is identified with the organic ("Great Planetary...conch...sulphur corolla"), compounding to an even greater degree those semantic difficulties first encountered in the apparent oxymorons of "mineral fibers" and "metallic houses." And even on the purely lexical level, words normally used as adjectives become nouns ("Planetary"), nouns become adjectives ("sulphur"), and other words present in the text are totally of the author's invention (e.g., "arcum")—requiring the reader to go well beyond the normal mechanisms of signification in order to create meaning.

Rosny's fiction thus spans the gamut of several signifying practices, ranging from common mimetic denotation to purely impressionistic non-referentiality. Unlike those of Verne, d'Ivoi, Le Rouge, or Robida, in Rosny's narratives it is the dynamics of *language* itself that effectively adds yet another level of "otherness" to the reader's assimilation of the text's "alien" content.

The "scientific novel" format has obviously reached a totally new generic configuration: the Vernian journey through space to distant lands and the Robidian journey through time to distant millennia has now become a journey through the (distancing) signifying structure of the text itself. The reader's fictional travels, used earlier as a vehicle for scientific pedagogy and/or social satire, now becomes a narrative end in itself. The overt textual presentation of "lessons-to-be-learned" (normally the result of an instructive dialogue between "teacher" and "pupil" characters who are embedded in a fictional milieu that is highly mimetic and that initially elicits such discussions) is replaced by a growing proliferation of "absent paradigms" and non-mimetic signifiers, requiring the active participation of the reader in order to generate meaning. Hence the inherent didacticism of this new brand of fictional discourse is no longer scientific; it is hermeneutic. It no longer seeks to expand the reader's knowledge of science, but rather to expand the reading experience itself. Its goal is no longer factual. It is textual. And as such, it can no longer be termed "scientific" fiction, but rather what the 20th century has come to call "science" fiction.

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RÉSUMÉ

Arthur D. Evans. ***La science-fiction contre la fiction scientifique en France; de Jules Verne à J.-H. Rosny aîné.***—*Il est nécessaire d'établir une différence théorique entre la science-fiction et son proche parent la fiction scientifique. Les romans de Jules Verne sont des exemples anticipés de fiction scientifique et ils diffèrent au niveau de la structure de la majorité des écrits de science-fiction. Les «Voyages extraordinaires» de Verne sont orientés à dessein vers l'implantation pédagogique de la connaissance scientifique des faits. Le plan détaillé narratif de chaque roman scientifique de cette série illustre cette intention d'une manière catégorique. Par un examen diachronique de la place et de la fonction d'un tel «discours didactique scientifique» dans les oeuvres de certains auteurs français de la fin du XIXe siècle et du début du XXe tels que Verne, d'Ivoi, Le Rouge, Robida et Rosny aîné, nous pouvons nous apercevoir d'une évolution tangible dans les recettes narratives qui sont employées. D'un côté, les passages déductifs et bien souvent simplifiés de pédagogie scientifique s'effacent progressivement et sont remplacés par des structures herméneutiques inductives qui s'emploient à mettre en valeur la vraisemblance de la fiction. D'un autre côté, la référence textuelle devient de plus en plus oblique, sans imitation et influe plus souvent sur le processus de lecture. C'est à travers l'étude de ces phénomènes narratifs que nous pouvons mieux distinguer la différence entre ces deux formes et ainsi assister à la transformation historique de la fiction scientifique en science-fiction.* (ABE)

Abstract.—*SF needs to be theoretically distinguished from its generic "cousin" Scientific Fiction. As an early example of the latter, Jules Verne's novels are structurally different from most SF. Verne's "Voyages Extraordinaires" were intentionally geared towards the pedagogical implantation of factual scientific knowledge. And the narratological blueprint of each "roman scientifique" in this series strongly reflects this intent. By examining diachronically the place and function of such "scientifically didactic discourse" in the works of certain French authors of the late 19th and early 20th centuries such as Verne, d'Ivoi, Le Rouge, Robida, and Rosny aîné, one can discern a palpable evolution in the narrative recipes used. On the one hand, the deductive (and often reductive) passages of scientific pedagogy become progressively muted and supplanted by inductive hermeneutic structures which serve to enhance fictional verisimilitude. On the other, textual referentiality increasingly grows "oblique" and non-mimetic, more frequently affecting the reading process itself. It is through an investigation of these narratological phenomena that one can best differentiate Scientific Fiction from SF as well as witness the historical transmutation of the former into the latter.* (ABE)